**Unearthing Firm Value: The Effect of Mandatory Sustainability Disclosures on Firm Information Environments**

by

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## Dedication

I dedicate this dissertation to my mother, Joyce Mathis, and my grandmother, Marjorie Edmunds. Thank you for your eternal love and support – you are both dearly missed.

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All errors are my own.

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**Abstract**

Mandatory disclosure of sustainability information is a new and growing type of disclosure requirement. Using the conflict minerals disclosure mandate from Dodd-Frank as my setting, I examine the information asymmetry and voluntary disclosure effects of mandatory sustainability disclosures. This mandate required firms to disclose their supply chain and materials sourcing procedures, as well as the due diligence efforts undertaken to determine whether conflict minerals were present in their products. Consistent with my predictions, I find that firms' conflict minerals disclosures, on average, resulted in decreased information asymmetry among investors. This decrease was mitigated for firms with greater institutional ownership, but only for those firms without prior supply chain-related sustainability concerns. I also find that managers respond to the observed decrease (increase) in information risk among investors by reducing (increasing) their voluntary disclosure after the first mandatory filing. I interpret these findings to suggest that the decrease in asymmetry arose from the overlap between the new disclosure and the private information sets of more sophisticated investors and that managers became aware of, and responded to, these effects. Together, these results demonstrate that mandatory sustainability disclosures change the information environment faced by investors and that managers adapt to this change by adjusting their voluntary disclosure behavior.

## Chapter 1 Introduction

In recent years, several countries around the world have begun requiring firms to disclose information about topics ranging from the presence of slavery in a firm's supply chain to the overall environmental, social and governance activities of the firm. Consistent with the stated intent of these mandates, the early academic research into the effects of these disclosures demonstrates that they are successful in shaping firm behavior and contain information about firm value that is used by investors (e.g., Christensen et al., 2017; Grewal et al., 2018). However, due to the unique nature of sustainability information and the complexity involved in translating that information into insights about firm value, it remains unclear which investors benefit from these disclosures and how disclosing firms respond to the resulting changes to their information environments.

In this study, I examine the effect of mandatory sustainability disclosures on information asymmetry among investors and management's reaction to these changes. Specifically, I address three research questions. First, do mandatory sustainability disclosures provide information about firm value to equity investors? Second, do mandatory sustainability disclosures change the information asymmetry among investors? Third, if these disclosures materially impact the firm's information environment, do managers respond to the impact of these disclosures on their firms' information environment? I focus on these questions because, given the growing interest in these

disclosures as a policy tool, it is important for both firms and policymakers to understand the potential ramifications of additional sustainability disclosure requirements.[1]

I use the conflict minerals disclosure mandate from Dodd-Frank as a setting to provide evidence on the consequences of mandatory sustainability disclosure. This setting provides several advantages relative to other sustainability disclosure mandates. First, the disclosure mandate requirements provide a large sample of disclosing firms and an extensive corpus of detailed disclosures.[2] Second, the conflict minerals disclosure mandate, passed in 2010, was not implemented until 2014, therefore mitigating the confounding effects of other Dodd-Frank provisions and post-recession legislation. Third, these conflict minerals disclosures must be filed annually with the SEC by May 31 on a new form, Form SD, which allows me to better isolate the effects of the Form SD from other disclosed information. Finally, unlike sustainability disclosure mandates examined in prior literature, the conflict minerals disclosures have uniform requirements across firms, discuss a single sustainability issue, require extensive supporting documentation for the firm's conclusion and are readily accessible on the SEC's website.[3] Together, this setting provides a unique opportunity to examine the consequences of mandatory sustainability disclosure.

I begin my empirical analysis by confirming the negative market reaction around the first required Form SD filing in 2014, noted in prior literature, to assess the information content of the disclosure. Using a sample of 636 firms and filings, I document a negative and statistically

[1] I am unaware of another paper examining the information asymmetry and voluntary disclosure effects of mandatory sustainability disclosures. The lack of activity in this area is highlighted by Christensen et al. (2019).
[2] Generally speaking, every publicly traded firm in the US is required to examine their products for the presence of certain minerals. Any firm that uses gold, tin, tungsten or tantalum in their products is subject to the mandatory disclosure requirement. These requirements are explained in more detail in section 2.
[3] Although a mine safety disclosure requirement, included in the firm's financial disclosures, was also mandated by Dodd-Frank, the scope of the information disclosed is only relevant to a specific industry and fewer firms were affected overall.

significant market response to the Form SD filings (Griffin et al., 2014). This suggests that investors, on average, do find the disclosures to contain useful information and provides motivation for my subsequent analyses.

Next, using a matched sample, I examine whether firms observe a change in information asymmetry among investors after the first required filing. While an increase in disclosure typically results in decreased information asymmetry, that reduction depends on the ability of less sophisticated investors to extract useful information from the disclosures (Verrecchia, 2001; Kim and Verrecchia, 1994) and sustainability disclosures are known to be challenging to understand (Smeuninx et al., 2016; Stone and Lodhia, 2019). On average, I document a statistically and economically significant decrease in information asymmetry (a 5.5% decrease in bid-ask spread) after the filing of Form SD that persists for 45 to 90 days beyond the original filing. Consistent with theory, I also document that firms observe an increase in the liquidity of their shares (a 4.7% decrease in Amihud's lambda) following the 2014 Form SD filing.

In cross-sectional analysis, I find that these effects are muted for firms with significant institutional ownership, consistent with institutions' increased processing capacity in generating additional private information from the new disclosure. However, for the subset of those high institutional ownership firms that previously suffered a negative supply-chain related sustainability event (my proxy for private information correlated with the conflict minerals disclosure), I observe that the release of the Form SD mitigates the information advantage of the sophisticated investors. This appears to indicate that the conflict minerals disclosure helps publicize previously private information held by a subset of investors.

Second, I examine whether managers adjust their voluntary disclosure behavior in response to the information environment changes caused by their conflict minerals disclosures.

According to a survey conducted by Graham et al. (2005), the vast majority of managers that observe a change in investors' "information risk" respond to that change by altering their voluntary disclosure behavior.[4] Using a matched differences-in-differences design, I examine the effect of this change in information risk on firms' voluntary disclosure behavior in the year following the first mandatory disclosure. I find that, on average, firms reduce their voluntary disclosure (proxied with annual earnings forecasts and Forms 8-K) after the first Form SD filing in 2014. This finding is consistent with firms observing the average decrease in the information risk facing investors and adjusting their disclosure behavior accordingly.

In the cross-section, I find that firms facing significant proprietary costs (proxied by a Herfindahl index to measure competition) are most likely to take advantage of this opportunity to decrease their voluntary disclosure. This is consistent with a high marginal cost of disclosure for firms in competitive environments. Additionally, I find that firms facing increased information asymmetry after the Form SD filing *increase* their voluntary disclosure, consistent with managers complementing their mandatory disclosure with additional, explanatory information to help counteract the increase in information risk.

These findings demonstrate that investors use the information provided in mandatory sustainability disclosures, that the disclosures reduce the information risk facing investors, and that these effects vary with the information in the disclosure and the sophistication of the firm's investor base. Managers also appear to respond to these changes in the information environment

[4] Information risk as described in Graham et al. (2005) refers to the risk facing investors from having an incomplete set of the material information needed to make trading decisions. In this study, I use the terms information risk and information asymmetry among investors interchangeably to describe the imbalance of information between informed and uninformed investors.

by altering their voluntary disclosure behavior. Together, these findings provide evidence that mandatory sustainability disclosures have significant effects on firm information environments.

My study contributes to several streams of literature. First, existing sustainability disclosure research has largely been limited to examining voluntary disclosures. As noted in Christensen et al. (2019), mandatory sustainability disclosure is a new and growing responsibility with scarce empirical evidence on its efficacy and consequences. As a result, policymakers are currently crafting sustainability mandates without fully understanding the effects of the policy tool. I extend our knowledge of these consequences by identifying a mandatory sustainability disclosure setting that provides large sample data and allows me to isolate the mandate's effects. With this data, I confirm that investors use the information provided in sustainability disclosures and find that these disclosures play a role in the information asymmetry, liquidity and voluntary disclosure behavior of the firm.

Second, my study links the sustainability disclosure literature to the existing research on the effects of traditional financial disclosure. While an extensive literature demonstrates that disclosure can lead to improvements in liquidity and information asymmetry, these findings have not been tested in the context of mandatory sustainability disclosure and are difficult to generalize to sustainability disclosures due to their unique characteristics. Specifically, while sustainability disclosures are designed for a broad set of stakeholders, they contain detailed information about sustainability activities that investors may find challenging to translate into insights about firm value. My study provides the first evidence that mandatory sustainability disclosures—crafted with a social policy intent—can engender these similar consequences for other mandatory disclosures.

Third, my study contributes to the literature on the potential consequences of novel disclosure technologies. Prior literature demonstrates that disclosure regulations such as Regulation FD and the XBRL mandate disproportionately benefited sophisticated investors and often resulted in negative consequences for retail investors (e.g., Eleswarapu et al., 2004; Blankespoor et al., 2014). My study contributes to this literature by demonstrating that these findings extend beyond traditional, quantitative financial reporting to disclosures where capital market participants are not the intended audience.

Finally, I add to the growing literature on the tradeoff between mandatory and voluntary disclosure decisions faced by managers. While prior literature has established that a manager's incentives surrounding voluntary disclosure are shaped by a firm's mandatory disclosures (e.g., Guay et al., 2016; Noh et al., 2018), it is unknown whether the firms' mandatory sustainability disclosure obligations evoke similar changes. I provide evidence that managers are sensitive to the information environment effects of mandatory sustainability disclosure and react by increasing (decreasing) their traditional voluntary disclosure in response to the decrease (increase) in information asymmetry.

## Chapter 2 Institutional Setting

For most of the early 2000s, the US Congress intermittently discussed discouraging the use of Congolese minerals in firms' supply chains due to these "conflict minerals" profits funding violence in Africa. This legislation became reality when Congress passed the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010. Included in Dodd-Frank, section 1502 directed the SEC to draft and issue rules requiring covered companies to determine and disclose their usage of conflict minerals on a new form, Form SD. This form is due annually on or before May 31 of each year, beginning in 2014, for the preceding reporting year.

After issuing the proposed version of the conflict minerals disclosure rule in December 2010, the SEC received comment letters detailing significant concerns about the mandate. Firms expressed concerns about their legal liability around the disclosure, the significant cost in producing the information, the high uncertainty regarding their findings, the disclosure of sensitive, material supply chain information, and concerns about the ability of the public to understand the complex disclosure and its limitations. Others argued that the information represented immaterial disclosure and created a deadweight cost on firms who complied with the mandate (e.g., letters from ITIC I, NMA II, and Taiwan Semi). These comments suggested that the conflict minerals disclosure rule could have far-reaching consequences beyond the intended change in behavior.

The final rule adopted by the SEC in 2012 requires a three-step analysis to reach the conflict minerals conclusion (Exchange Act Release No. 67716, Aug. 22, 2012). First,

companies must undertake an analysis of whether they are using the covered minerals (tin, tungsten, gold and tantalum) in their products. Second, they must undertake a "reasonable country of origin inquiry" (RCOI) for those minerals to determine whether the minerals were sourced from a covered country.[5] If the RCOI returns no evidence of minerals from covered countries, the company must disclose its determination along with a brief summary of its inquiry process for reaching that determination to the SEC on the new Form SD.

Third, if a firm has reason to believe that it is using conflict minerals (or if it is unable to determine their conflict minerals status), it must conduct additional due diligence and file a Conflict Minerals Report alongside its Form SD explaining the procedure used to make the determination and making a positive conclusion regarding its findings. The due diligence required for the report primarily takes the form of surveys and interviews with first-tier suppliers, determining the suppliers' use of minerals from the covered countries, and having first-tier suppliers similarly audit their downstream supply chain.[6] Because the evidentiary burden to claim that products are "DRC Conflict Free" is high, very few firms (about 7%) incur the cost necessary to reach this conclusion. As a result, over 65% of firms state that they are unable to determine their conflict minerals status on their Form SD.[7]

[5] Covered countries are defined in Section 1502 of Dodd-Frank as the Democratic Republic of the Congo (DRC) and countries having an internationally recognized border with DRC including Angola, Burundi, Central African Republic, Republic of the Congo, Rwanda, South Sudan, Tanzania, Uganda, and Zambia.

[6] The specific procedures adopted by firms are typically derived from OECD guidance containing a framework for examining a firm's supply chain. While this guidance is non-binding, it has been highlighted by the SEC as a valuable template and is referenced by many disclosing firms as the model behind their compliance efforts. As a result, the compliance efforts of firms are largely comparable and share similar language regarding the design and findings of their inquiries.

[7] There is considerable cross-sectional variation within this conclusion. Some firms exert virtually no effort in their supply chain examinations while other firms exert considerable effort but, due to the complexity of their supply chain, are unable to satisfy the burden of proof. For example, Apple Inc. dedicated considerable resources to creating and maintaining a conflict minerals supplier certification program and can account for almost 100% of their minerals' origins. However, their 2014 filing concludes that they are still unable to fully determine their conflict minerals status.

The resulting contents of the Form SD and its attachments are a discussion of the RCOI, the design and results of due diligence processes, future risk mitigation strategies, and a conclusion related to the firm's conflict minerals status. In addition to the information about compliance, many firms (about 45% of CMR filers) elect to provide detailed lists of their smelters and suppliers of each covered mineral. These lists contain granular information ranging from suppliers' and smelters' names and addresses to contact information for compliance staff at each supplier and names and locations of specific mines and smelting facilities from which the firm's supplies are sourced. These tabulated lists are sometimes accompanied by qualitative explanations of the firm's relationship with certain suppliers, as well as whether each supplier is in good standing with watchdog organizations that certify compliance with conflict-free mineral sourcing programs. When disclosing firms have multiple products subject to the disclosure mandate, they typically provide information and conclusions related to each product separately.[8]

The first filing deadline for Form SD occurred on June 2, 2014, for the 2013 reporting year.[9] In 2014, about 1,300 firms filed Forms SD with the SEC. While firms expressed concerns about the mandated disclosure, they faced significant legal and operational backlash for non-compliance, suggesting that most firms incurred the costs necessary to comply with the requirements.

During the mandatory filing period, enforcement of the regulation was handled by the SEC. Because the Obama administration was responsible for signing the bill into law and

[8] Accordingly, firms rarely (about 4% of filings) make a DRC Conflict Free determination for one product while unable to determine their conflict minerals status for other products.
[9] May 31, 2014 fell on a Saturday. The law delays the requirement until the following non-holiday business day if the deadline falls on a holiday or weekend date. The disclosure may also be filed early with no penalty. In 2014, most firms (about 99%) elected to file on or immediately before the deadline. In subsequent years, some firms (about 5%) chose to move their disclosures to align with their annual report or other disclosure obligations.

overseeing the rulemaking process, its enforcement efforts were likely similar to other enforcement activity by the SEC during the same period. In addition to potential SEC fines and sanctions, firms choosing not to comply with the mandate also faced the possibility of public backlash and difficulty maintaining customers. For example, the state of California included a provision in its public contracts requiring compliance with Section 1502 of Dodd-Frank. Also, some supply chain contracts disclosed on the SEC EDGAR database now require compliance with the conflict minerals disclosure rule.

The disclosure only remained mandatory for three years, through the 2015 reporting year filed on May 31, 2016. In 2017, the Trump administration stopped enforcement of the law following an adverse court ruling on the constitutionality of aspects of the disclosure mandate.[10] However, many firms have chosen to continue disclosing after this announcement, as it is currently unclear whether the SEC has the authority to unilaterally stop enforcing a law.

[10] The Trump administration also elected not to pursue an appeal of this adverse decision. Congress is reported to be investigating its standing to appeal the ruling, leaving the current legal requirements uncertain.

# Chapter 3 Literature Summary and Hypotheses Development

## 3.1 Background

Over the last few decades, firms have dramatically increased the breadth and volume of their nonfinancial disclosures, particularly over their environmental and social sustainability activities.[11] This growth in disclosure is a response both to stakeholder demand and to an increase in regulatory scrutiny. For example, Barth et al. (1997) demonstrated that firms increased disclosure of environmental liabilities following increased environmental regulations and Neu et al. (1998) showed that firms increased their narratives for environmental disclosures following investor and regulator concerns around environmental issues.

The academic literature has documented broad and significant effects of these disclosures ranging from changes in firms' accounting choices to changes in investors' required cost of capital and total firm value (e.g., Barth et al., 2017; Dhaliwal et al., 2011; Elliott et al., 2014; Matsumura et al., 2014).[12] However, nearly all of the early sustainability disclosures issued by firms were voluntarily provided and only a small portion of the disclosures currently provided are mandatory (Gatti et al., 2019; Christensen et al., 2019). This voluntary aspect of disclosure presents significant challenges when assessing the causes and consequences of sustainability

[11] In KPMG's 1999 survey on sustainability reporting, 35 percent of the global top 250 companies (G250) issued environmental, social or sustainability reports in addition to their financial reporting. In the KPMG survey conducted in 2020, that number had risen to 96 percent of G250 firms and 80 percent of all companies worldwide. (KPMG's International Survey of Corporate Sustainability Reporting 1999, 2020)

[12] Christensen et al. (2019) provide a more comprehensive review of the extant voluntary sustainability disclosure literature.

disclosure and limits the applicability of prior literature to the growing corpus of mandatory sustainability disclosures (e.g., Grewal et al., 2018; Christensen et al., 2019).

Firms that have observed negative consequences to their sustainability disclosures and firms that perform poorly on sustainability dimensions are less likely to be included in a sample of voluntarily provided disclosures (e.g., Milgrom 1981; Dhaliwal et al., 2011). Accordingly, the results observed in prior literature reflect a joint test of the study's research question and the potentially confounding drivers of the firm's choice to disclose.[13] Given the substantial number of documented determinants of a firm's choice to disclose (e.g., Cowen et al., 1987; Eccles et al., 2014; Kim and Davis, 2016), further study of the effects of sustainability disclosure is needed.

### 3.2 Market Reaction and Information Content of Mandatory Sustainability Disclosure

In recent years, countries around the world have begun mandating various sustainability disclosures with the stated objective of achieving social welfare goals. This compulsory aspect of the disclosure mandates enables researchers to isolate the effects of the disclosures from the underlying activity and from the characteristics that drive the choice to voluntarily disclose. Although investors are often not the intended beneficiaries of the mandates, prior literature has established that investors can make use of both voluntary and mandatory sustainability disclosures (Dhaliwal et al., 2011; Flammer, 2013; Kruger, 2015; Christensen et al., 2017; Grewal et al., 2018), including firms' conflict minerals disclosures (e.g., Griffin et al., 2014), in their valuation decisions.

[13] In the case of voluntary sustainability disclosures, the choice to disclose is often difficult to separate from the disclosure itself. While theory suggests that, in equilibrium, competitive pressures can drive all but the worst behaving firms to disclose their activities (e.g., Akerlof 1970; Grossman 1981; Milgrom 1981), the presence of disclosure costs and investor uncertainty about the manager's information set prevent this 'unraveling' effect from occurring in the sustainability disclosure context (e.g., Jovanovic 1982; Verrecchia 1983; Dye 1985; Jung and Kwon 1988).

Valuation information in sustainability disclosures can come from four sources. First, the mandatory disclosure can provide information directly related to the covered subject matter, such as the specific costs and outcomes of a firm's mine safety program or the cost reduction resulting from paying substandard wages to employees (e.g., Christensen et al., 2017). Second, the disclosure can provide information about the firm's operations, procedures, transparency and governance through the due diligence information provided in support of its conclusion(s). Third, investors can use the disclosure to form expectations regarding the direct cost of current and future compliance with sustainability disclosure regulation. This includes the costs of preparing, disseminating and assuring the information provided (Cohen and Simnett, 2015; Grewal et al., 2018). Finally, investors can use the disclosure to form expectations regarding the reputational, political and proprietary costs surrounding the disclosed activity and future disclosure obligations (e.g., Pfarrer et al., 2010; Hombach and Sellhorn, 2018).[14]

Conflict minerals disclosures contain content that falls within each of these categories. Firms are required to disclose a conclusion about their conflict minerals status, due diligence information about their mineral sourcing, and supporting documentation for the conclusion(s) reached. In many cases, firms also elect to provide additional information about their supply chains, their co-operation with not-for-profit watchdog organizations, and their adherence to OECD guidance on mineral sourcing in Africa. Each of these elements, therefore, reflects information that could potentially be used in the valuation decisions of investors; both

[14] These costs are especially significant in a sustainability disclosure context because, in additional to traditional users of firm disclosures, this information attracts scrutiny from activist groups and the sophistication of these users can vary widely (Christensen et al., 2019). Several studies have demonstrated that activist groups use sustainability information as the basis for reputationally damaging campaigns such as boycotts and protests (e.g., Franks et al., 2014), suggesting that firms can incur significant costs when forced to disclose sustainability information.

proponents and critics of this disclosure have acknowledged this potential informational value.[15] Because this specific information is not required in other firm disclosures and, as such, is unlikely to be stale or well known to all investors, this disclosure should represent a source of new information to capital market participants.[16]

Additionally, the due diligence components of conflict minerals disclosures address topics that investors use when making valuation decisions. For example, prior literature has documented the value-relevance of information about the geographic distribution of a firm's suppliers and supply chain operations (e.g., Errunza and Senbet, 1984; Denis et al., 2002), evidence of a firm's knowledge of its own supply chain and ability to inspect it for the presence of risk (Holcomb et al., 2011; Kim and Davis, 2016; Swift et al., 2019), reputational and operational costs associated with the prevalence of operations in conflict regions (Driffield et al., 2012), and how these elements compare to other peer firms within the industry.

Accordingly, the conflict minerals disclosure should serve an information role and, in the absence of informational frictions (Kim and Verrecchia, 1994), it is likely that investors will include any useful information from the disclosure in their valuation of the firm. Therefore, the presence and use of that information content should result in a significant market reaction upon its release. Stated in the alternative,

**H1:** Firms observe abnormal returns in response to their conflict minerals disclosures.

[15] In comment letters to the SEC, proponents highlighted the material information about supply chain risk in the disclosures as an added justification for the mandate, while detractors acknowledged the information's value but expressed concern over the significant cost of compliance with the mandate.

[16] While this content appears to have significant information about firm value that could be useful to investors, very few firms voluntarily reported on their conflict minerals status prior to the disclosure mandate. In comment letters to the SEC, firms explained that they did not previously disclose this information because the cost to acquire it was prohibitively high and, as such, few firms had the information prior to the mandate.

### 3.3 Information Asymmetry Effects of Mandatory Sustainability Disclosure

In addition to the valuation implications of the conflict minerals disclosures, it remains unclear whether the information is broadly available or is only accessible to the most sophisticated investors. Theoretically, Verrecchia (2001) reviews a large literature where disclosure helps to mitigate information asymmetry when the disclosure contains information that overlaps with (or is correlated with) the private information of informed investors and is at least partially accessible to uninformed investors. By contrast, if the disclosure is difficult to interpret or translate into information about firm value, the disclosure may increase information asymmetry because the disclosure is only useful to a more sophisticated subset of the audience (e.g., Kim and Verrecchia, 1994; Loughran and McDonald, 2014). While these theories have been demonstrated empirically in various settings, the conflicting theoretical predictions, as well as the unique nature of sustainability mandates, make it difficult to generalize this existing literature to the sustainability disclosure context.[17]

In the context of my study, the newly disclosed information about firms' supply chains and mineral sourcing may have already existed in sophisticated investors' private information sets. Sophisticated investors have historically demanded "nonfinancial" sustainability information (Eccles et al., 2011) and have been shown to gain an information advantage by following (Luo and Nagarajan, 2014) or investing in companies along a given firm's supply chain (Gong and Luo, 2018; Alldredge and Puckett, 2016). Accordingly, sophisticated investors

[17] Several studies have documented the effects of voluntary and mandatory financial reporting (e.g., Leuz and Wysocki, 2016) as well as voluntary sustainability disclosure and integrated reporting requirements (Cho et al., 2013 Barth et al., 2017; Grewal et al., 2018). However, it is difficult to generalize the existing literature to a mandatory sustainability disclosure context for several reasons. First, most studies on voluntary sustainability disclosure are unable to disentangle the choice to voluntarily disclose and the underlying sustainability activity from the disclosure itself. Second, Kalkanci et al. (2016) demonstrate that mandatory sustainability information can be less informative due to managerial incentives to avoid learning (and being compelled to disclose) bad news. Finally, by comparison to financial reporting, sustainability disclosures are designed to serve social welfare purposes, have a unique set of users with widely varying degrees of sophistication and contain a narrow tranche of information about aspects of a firm's activities (Christensen et al., 2019).

had incentives to gather and use private information similar to (or correlated with) the required conflict minerals disclosures.[18] After the first mandated filing, this information became more widely available and the information wedge among investors may have been reduced (e.g., Healy et al., 1999).

However, it is possible that less sophisticated investors ignore or are unable to effectively process sustainability information (Moss et al., 2020). Prior literature has documented that sustainability disclosures can be difficult to read (Smeuninx et al., 2016; Stone and Lodhia, 2019), that investors' information extraction process from textual disclosure is often complex and costly (Li 2008; Rennekamp, 2012; Kalay 2015) and that different types of disclosures require customized methods to make accurate assessments of the content (e.g., Loughran and McDonald, 2016). Even if the conflict minerals disclosures were written unambiguously, the expertise necessary to translate the conclusion and supporting disclosure into insights about firm value may be unavailable to the average investor.[19]

Taken together, the ability of unsophisticated investors to extract the information from a firm's conflict minerals disclosures, and to decrease their information disadvantage relative to more sophisticated investors, is an empirical question. While I predict that firms observe a

[18] While this content appears to have significant information about firm value, virtually no firms voluntarily reported on their conflict minerals status prior to the disclosure mandate. In comment letters to the SEC, firms explained that they did not previously disclose this information because the cost to acquire it was prohibitively high and, as such, few firms had the information prior to the mandate. Because this information is not required in other firm disclosures and, as such, is unlikely to be stale or well known to all investors, this disclosure likely represents a source of new information to at least *some* investors.

[19] With respect to the conflict minerals disclosure mandate, the disclosures *are* likely written for a broad and less sophisticated audience because the disclosure mandate was intended to provide information to the general public about a social policy concern. Additionally, the SEC encourages, and in some cases requires, filers to use clear and concise language in their disclosures and provides their Plain English Handbook as a recommended style guide. However, the average readability of the disclosures remains very low, likely due to the industry jargon and technical content contained in the Forms SD.

change in information asymmetry resulting from the newly disclosed conflict minerals information, I make a nondirectional prediction for the on-average effect.[20]

Stated in the null,

**H2a**: Information asymmetry among equity investors does not change after the release of the conflict minerals disclosure.

Cross-sectionally, I predict that firms with more sophisticated investors will observe an increase (or smaller decrease) in information asymmetry, ceteris paribus. Sophisticated investors are more likely to become aware of new disclosures (e.g., Hirschleifer and Teoh, 2003), can process disclosures more effectively and can generate private information from "public" disclosure, increasing observed information asymmetry (Blankespoor et al., 2020). Sophisticated investors have also historically sought out sustainability information and, accordingly, are likely to have expertise connecting that information to firm value (Eccles et al., 2011). Finally, recent evidence suggests that managers tailor their disclosures to the preferences and demands of influential stakeholder groups, such as equity analysts and institutional investors, resulting in an information advantage for those groups (Jung 2013; Chapman and Green, 2018). If this expertise and influence are greatest when sophisticated ownership is high, more sophisticated ownership should result in increased information asymmetry.

Stated in the alternative,

[20] If the information is made available to all investors equally, the level of information asymmetry could also remain constant if the disclosed information did not overlap with the private information of informed investors. However, given the superior disclosure processing capacity of sophisticated investors and the recent popularity of sustainable investing, I do not believe this represents a credible null hypothesis.

**H2b:** Information asymmetry will increase (or decrease less) among equity investors in firms with high sophisticated ownership.

Additionally, information asymmetry and liquidity are inherently linked. Firms should observe an improvement (decline) in their stock's liquidity if the information asymmetry among investors decreases (increases). This follows from the theory that information asymmetry imposes a cost on investors by introducing adverse selection risk into their trading decisions. Effectively, the uninformed traders move to price protect or exit the market due to the concern that informed investors exist in the market and only choose to buy (sell) shares because their private information set suggests that the stock is under- (over-) valued (e.g., Akerlof, 1970; Glosten and Milgrom, 1985). Accordingly, I predict that firms observe a directional change in liquidity opposite that of the change in information asymmetry resulting from the conflict minerals disclosure.

Stated in the alternative,

**H2c:** The liquidity of a firm's shares increases (decreases) when information asymmetry decreases (increases) following the release of the conflict minerals disclosure.

### 3.4 Voluntary Disclosure Effects of Mandatory Sustainability Disclosure

Managers are likely to respond to new mandatory disclosure requirements, such as the conflict minerals disclosure mandate, by altering their voluntary disclosure behavior (e.g., Healy and Palepu, 2001). This is especially true when these disclosure mandates cause changes to the "information risk" faced by investors, such as the changes in information asymmetry and liquidity examined in this study (Graham et al., 2005). Accordingly, for firms where investors observe increased (decreased) information risk as the result of a sustainability disclosure

mandate, I predict that managers will respond by increasing (decreasing) their voluntary disclosure behavior.

I make this prediction because the decision by managers to disclose information is a balance between the benefits achieved (increased liquidity, reputational benefits, etc.) and costs incurred (proprietary concerns, litigation risk, etc.). Prior studies have documented a host of factors that shift that balance and change managers' marginal disclosure decisions (e.g., Miller 2002; Noh et al., 2018). In this setting, managers may choose to decrease voluntary disclosure if the new conflict minerals disclosure improves the information environment of the firm (i.e., increases liquidity) but the costs of incremental voluntary disclosure remain fixed or increase (e.g., Verrecchia 1990; Noh et al., 2018).[21]

By contrast, if only the most sophisticated investors can make use of mandatory sustainability disclosures, firms will observe an increase in information asymmetry and, thus, an increase to the information risk facing investors. Graham et al. (2005) present survey evidence that 81% of executives issue voluntary disclosure to alleviate information risk about their stock's value and that 72% of executives issue voluntary disclosure to provide information that is not included in mandatory disclosures.[22] Their findings are consistent with theoretical evidence that managers will provide voluntary disclosure when mandatory disclosure contains a "mix" of signals about firm value and managers have private information about this mix (Bagnoli and Watts, 2007). In the conflict minerals disclosure context, if the disclosures are overly complex and result in increased information asymmetry among investors, managers may issue additional

[21] More generally, this decrease should be observed when the net informational benefits of incremental voluntary disclosure decrease. That is, if the firm's information environment is not sufficiently robust to integrate the information from the new mandatory disclosure, then the net benefits to voluntary disclosure are not necessarily reduced, and the resulting changes to the voluntary disclosure equilibrium are less clear.

[22] Consistent with this intuition, a large literature provides evidence that increased information asymmetry among investors can be resolved by additional disclosure (e.g., Diamond and Verrecchia, 1991; Kim and Verrecchia, 1994).

voluntary disclosure to help investors understand the earnings and valuation implications of the new disclosure.[23]

Importantly, it is not necessary for the foregone voluntary disclosure to share topical coverage or content with the conflict minerals disclosure in order to be affected. Significant changes to firm disclosure behavior can still be observed when the voluntary disclosure acts as a substitute or complement to the newly public information (Börgers et al., 2013; Choi et al., 2019).[24] Accordingly, while voluntary disclosures about (or correlated with) these topics are the most likely candidates to be reduced or eliminated, any voluntary disclosure that reflects information about future profits, such as earnings guidance provided by management, may be affected by the new mandatory disclosure.

Stated in the alternative,

**H3**: Firms will decrease (increase) their frequency of voluntary disclosure when information asymmetry decreases (increases) after the release of the conflict minerals disclosure.

[23] This could include qualitative discussions to contextualize the firm's conflict minerals conclusion and/or quantitative forecasts to enumerate the operational costs of changing the firm's supply chain, administrative costs of complying with the mandate, and future expected reputational costs and benefits.

[24] I use the terms "substitutes" and "complements" as defined in Börgers et al. (2013), where a signal is a complement (substitute) if it is made more (less) useful by the presence of an additional signal. In the conflict minerals disclosures, investors are provided with details that prior literature finds have an impact on future earnings and firm value. This includes information about the firm's geographic distribution of activities, supply chain risk and visibility, and other operational and reputational risks, in addition to the specific sustainability conclusions (Errunza and Senbet, 1984; Denis et al., 2002; Kim and Davis, 2016; Swift et al., 2019; Driffield et al., 2012).

## Chapter 4 Sample Selection and Variable Definitions

### 4.1 Sample Selection

My initial sample comprises the corpus of Form SD disclosures filed in 2014 on the SEC's EDGAR database. [25] These disclosing firms are merged with the Compustat, CRSP, Thomson, RepRisk and IBES data universes resulting in a sample of 947 firms and Form SD filings in 2014. I use Compustat for financial statement data, CRSP for stock data, Thomson for institutional investor data, RepRisk for data on prior sustainability issues within firms' supply chains and IBES for data on management and analyst forecasts. Finally, I drop observations with a share price of less than 1 dollar on the Form SD filing date. For tests of H1, I examine the market reaction around the remaining 2014 Form SD filings using CRSP price data.

For tests of H2, I match the disclosing firms with non-disclosing "control" firms on size, growth opportunities, leverage and industry-adjusted profitability.[26] To be included in this sample, a firm must have sufficient trading data to calculate bid-ask spread and Amihud's lambda over the pre- and post-event periods and have non-missing financial statement data to calculate control variables. For tests utilizing RepRisk and Thomson data, observations without database coverage

[25] Forms SD that are filed more than 2 days after the deadline or within 10 days of an earnings announcement are omitted from the main analysis to mitigate concerns about simultaneous alternative events that may be driving the observed results. Inferences remain unchanged when these observations are included.
[26] Non-filing firms with an earnings announcement within 10 days of the filing deadline are excluded from the pool of potential matches to avoid simultaneous disclosure events that might confound my inferences.

are assigned a value of 0 for the relevant variables.[27] After matching and data requirements, this sample consists of 636 disclosing firms and 1,327 control firms.

For tests of H3, my sample extends to capture one year before and after the 2014 filing mandate.[28] I isolate these two years in order to examine the effect of the new information in the first mandatory disclosure. Because subsequent conflict minerals disclosures have largely overlapping information sets with the initial disclosure (an on-average cosine similarity of 0.95 with the same firm's 2014 disclosure), including future disclosure observations in the sample would likely obscure the actual effect of the initial information content. Furthermore, given the additional time to digest the original disclosure, future disclosures may be interpreted more effectively than the first.[29] In addition to the data requirements above, I use IBES Guidance to capture a firm's management forecast frequency and IBES analyst data to determine analyst following. For firms without IBES coverage, I code these variables as 0.[30] After matching and data requirements, this sample consists of 1,616 firm-years from disclosing firms and 2,997 firm-years from control firms.

Following Correia (2015), "singleton" observations—fixed effect groups with only one observation in the sample—are removed when using fixed effects estimators. As a result, sample sizes may vary slightly across tests and specifications. Continuous variables are winsorized at the 1% and 99% levels to control for the effects of outliers.

[27] Inferences are robust to excluding firms without database coverage.
[28] For example, a firm filing its first Form SD on June 2, 2014 will have two observations represented in the sample: (1) the 365-day period beginning 370 days prior to and ending 5 days prior to the Form SD filing and (2) the 365-day period beginning 5 days after the Form SD filing and ending 370 days after the Form SD filing. For non-filers, the "filing date" is treated as June 2, 2014, the most common filing date among filing firms.
[29] Consistent with these beliefs, including additional years to the post-period reduces the coefficient size and decreases statistical significance, but the effect remains statistically significant at conventional levels.
[30] Results are unchanged if firms without IBES coverage are dropped, although the sample is significantly smaller.

### 4.2 Variable Definitions

To examine the effect of conflict minerals disclosures on firms' information environments, I focus on the cumulative abnormal market reaction (CAR) as a proxy for the presence of information content, abnormal bid-ask spread as a proxy for the change in information asymmetry, abnormal Amihud's lambda as a proxy for the change in liquidity, and the frequency of annual EPS forecasts as a proxy for voluntary disclosure behavior.[31] Similar to prior literature (e.g., Blankespoor et al., 2014; Guay et al., 2016), I define the event period as the 3-day window beginning with the Form SD filing date and the reference period as the 45-day period beginning 50 days before and ending 5 days before the Form SD filing.[32] To capture exposure to the mandatory sustainability disclosure, I employ *Filer Firm*, an indicator variable equal to 1 for firms that filed a conflict minerals disclosure in 2014.[33]

#### 4.2.1 Market Reaction, Information Asymmetry and Liquidity

In my analyses of the abnormal returns surrounding the Form SD filings, I estimate the 3- and 5-day cumulative abnormal returns using the Fama-French three-factor model. I examine the change in information asymmetry through the effect of the sustainability disclosure mandate on bid-ask spread because spreads are often cited as explicit measurements of information asymmetry (e.g., Leuz and Verrecchia, 2000).[34] Following prior literature, I measure abnormal bid-ask spread, *Chg Spread*, as the event period average daily percent spread minus the reference period average daily percent spread, where daily percent spread is calculated as the difference between the ask

[31] Abnormal is defined here as using the firm as its own control over a pre-event reference period.
[32] My findings are robust to different definitions of the event and reference periods. In particular, in untabulated analysis, I redefine the event window to be [-2,2], [-1,1] and [0,1] and the reference period to be [-60,-5], [-90,-5] and [-180,-5] and find similar results under each alternative.
[33] This variable is effectively equivalent to "treatment" in a difference-in-differences design.
[34] As noted in Nagar et al. (2019), spreads are comprised of several components including (1) the cost of trading with better informed investors, (2) the cost of holding stock in inventory, and (3) order processing costs. My measure should approximate the change in information asymmetry because holding and order processing costs are largely stable from year to year and are therefore likely differenced out by my calculation of *Chg Spread*.

and bid prices, divided by the midpoint of the ask and bid prices, all multiplied by 100 (Bushee et al., 2010; Blankespoor et al., 2014). I remove spreads larger than the sample 99th percentile of daily observed spreads to control for the influence of outliers in the construction of the average measures. Additionally, I measure abnormal liquidity, *Chg Lambda*, as the event period average daily lambda minus the reference period average daily lambda, where daily lambda is calculated as the absolute value of the daily stock return divided by the daily dollar volume, multiplied by $10^6$.

### 4.2.2 Voluntary Disclosure Variables

To proxy for a firm's voluntary disclosure behavior, I calculate *Forecast Count*, the frequency of annual earnings guidance provided by management during the 365-day period before and after the Form SD filing date. I use annual guidance as my proxy because the information contained in sustainability disclosure has a longer horizon and is associated with long-run firm performance (Christensen et al., 2019). Thus, firms are most likely to adjust this form of disclosure in response to a sustainability disclosure mandate.[35] In additional analyses, I employ an alternative proxy for voluntary disclosure, *8-K Count*, defined as the number of Forms 8-K filed during the window. Forms 8-K are designed to provide material firm information and details about significant firm events publicly to investors and represent a significant portion of a firm's voluntary and mandatory disclosure behavior (He and Plumlee, 2019). If managers choose to communicate with investors to help them contextualize and interpret the firm's conflict minerals disclosures, Forms 8-K represent a primary dissemination medium for that information.[36]

### 4.2.3 Control and Cross-Sectional Variables

[35] In untabulated analysis, quarterly forecasts alone do not appear to be significantly correlated with the conflict minerals disclosure at conventional levels.

[36] A non-trivial portion of firms also issue press releases that are not accompanied by Forms 8-K (Mathis 2020), but control firms appear to issue press releases accompanied by a Form 8-K in the same proportions as filer firms.

I control for several known determinants of information asymmetry. In particular, I include firm size (*Size*), measured as the natural logarithm of total assets, growth opportunities (*MTB*), measured as the sum of the current market value of the firm plus the book value of liabilities, divided by total assets, and existing leverage (*Leverage*), measured as the sum of long-term debt and short-term debt divided by total assets. I also include profitability (*ROA*), defined as the industry-adjusted income before extraordinary items divided by total assets, historical return volatility (*SD(Ret)*), defined as the standard deviation of the preceding 12 monthly buy-and-hold returns multiplied by 100, and historical returns (*Returns*), measured as the annual buy-and-hold return over the 12 months preceding the observation date. Each of these variables is measured with the most recent information available prior to the month of the Form SD filing date. I also control for contemporaneous trading volume (*Log(Volume)*), measured as the natural logarithm of the average trading volume over the 5 days preceding the Form SD filing, to control for its determinant effect on spreads (Holden et al., 2013).

In my tests of H3, I include these controls and additional variables known to influence firms' voluntary disclosure choices to rule out alternative explanations for changes in disclosure behavior. Specifically, I include an indicator variable (*Loss*), equal to 1 if firms observed a loss in the prior fiscal year, equity analyst following (*Following*), measured as the natural logarithm of 1 plus the number of analysts following the firm during the prior year, analyst forecast dispersion (*Dispersion*), measured as the standard deviation of analysts' annual earnings forecasts scaled by total assets, and special items (*Special Items*), measured as the value of special items reported as a separate component of income from continuing operations scaled by

total assets.[37] I also include *Chg Spread* and *Chg Lambda* as defined above to control for the average change in information asymmetry and liquidity during the event window for all firms.

In my cross-sectional analyses, I use *IO Perc*, the percentage of common shares owned by institutional investors, *Prior Event*, an indicator variable equal to 1 if the firm suffered a negative supply-chain related sustainability event in the previous two years (as defined by RepRisk), *Competition*, the industry-year's Herfindahl index multiplied by negative 1, and *Spread Decrease*, an indicator variable equal to 1 if *Chg Spread* is negative. In various specifications, I also include a variety of fixed effects to further control for endogeneity concerns. Industry is measured at the Fama-French 48 industry classification level, date is defined as the filing date of the Form SD (June 2, 2014 for non-filers), and industry-date represents the interaction of industry and date to control for time-varying, industry-specific effects.

[37] Because *Dispersion* requires multiple analyst forecasts to calculate, the sample sizes for tests including this variable are slightly lower than for other specifications.

# Chapter 5 Research Design and Results

## 5.1 Descriptive Statistics and Univariate Analyses

Table 1 presents industry and filing status frequency tables for the entire, unmatched sample of conflict minerals disclosures. Panel A reports the frequency of firm membership in each of the Fama-French 10-digit industry codes for firms filing Forms SD in 2014 and for all Compustat firms as a benchmark. While the majority of filer firms are classified as manufacturing and business equipment (about 60%), firms from each of the 10 classifications are subject to, and comply with, the filing mandate. This demonstrates that the filing sample represents a broad cross-section of firms in contrast to prior studies that are restricted to single industries or small, hand-collected samples.

Panel B reports the count of firms filing Forms SD by filing type. I include the filings from 2015 and 2016 to demonstrate the relative stability of the information provided over time. Over the three years, I observe slight variations in the proportion of firms filing Forms SD alone but the number of firms filing Forms SD with accompanying conflict minerals reports is largely consistent across time.[38] Panel C reports the frequency of each conflict minerals conclusion in each of the available mandatory filing years.[39] A majority of firms state that they are unable to determine their

[38] Many firms chose to file Forms SD in 2014 as they were uncertain about their reporting obligations under the regulation. Even some firms that opted not to file Forms SD still chose to issue a press release and Form 8-K explaining that they did not believe they were subject to the mandate because they did not use the specified minerals in their supply chains. Inferences are unchanged when restricting my sample to only firms that disclose in each of the three mandatory filing years.

[39] Data provided by Development International is used to classify the conclusion of the 2015 and 2016 filings. 2014 data is currently unavailable but a random, hand-coded sample suggests a similar distribution to 2015.

conflict minerals status in their 2015 disclosure and this number remains over 65% for the duration of the mandate. Because the standard of proof necessary for a firm to conclude that it is "DRC Conflict Free" is high, there is considerable heterogeneity in the indeterminate category. While some firms appear to exert minimal effort and provide few details on their inspection efforts, others provide thorough disclosures of their due diligence procedures and findings. Accordingly, while the conflict minerals conclusion for these firms may not contain specific information, the accompanying disclosure does not necessarily lack information content due to its uncertain conclusion.[40]

Table 2 presents the summary statistics for the samples in the tests of H2. Panels A and B display the descriptive statistics for the matched filing and non-filing samples, respectively. On average, filer firms observe a reduction in bid-ask spread, a proxy for the information asymmetry among investors. For non-filing firms, the sample mean is slightly positive but is statistically insignificant at conventional levels. While the majority of filing firms (about 64%) enjoy a decrease in information asymmetry, some firms observe increased asymmetry among investors, potentially due to the complexity of the disclosure or relative information advantage of some investors over others. These findings are consistent with Forms SD providing information to investors and altering the information wedge between more-informed and less-informed investors. Panel C displays the difference in means between the filer and non-filer firms on the variables used in the tests of H2. There is a significant difference between the two samples of each variable before the matching procedure. After matching, the only remaining significant differences are the outcome variable, *Chg Spread*, and the related indicator, *Spread Decrease*.

[40] In untabulated analyses, I confirm this intuition and find only weak associations between the conflict minerals conclusion in a random, hand-coded sample and my outcomes of interest.

Table 3 presents the summary statistics for the main sample in the tests of H3. Panels A and B display the descriptive statistics for the matched filing and non-filing samples, respectively. The distribution of variables is similar to the distributions observed in prior forecasting literature, with filer firms being slightly more frequent forecasters, unconditionally. Table C assesses the covariate balance between the filer and non-filer firms on the variables used in the test of H3. Before matching, filer and non-filer firms appear significantly different on almost every measured dimension. After matching, significant differences remain on *Forecast Count*, the annual EPS forecast frequency, and *Spread Decrease*, consistent with Table 2, Panel C. Additionally, there are statistically significant, but economically small, differences between filers and non-filers on *Following* and *Dispersion*, suggesting that filer firms may have more robust information environments ex-ante.[41]

[41] This finding is consistent with the higher historical frequency of management guidance from filer firms attracting additional analyst following and decreasing analyst uncertainty relative to non-filer firms.

**Table 4, Panel A: Event Study of Cumulative Abnormal Returns Around 2014 Filings (H1)**

confirms the cumulative abnormal returns (*CAR*) tests from Griffin et al. (2014) to demonstrate the presence of valuation information in firms' conflict minerals disclosures. Following prior literature, I infer the presence of information in a disclosure from significant, abnormal equity market returns (e.g., Armstrong et al., 2010; Zhang 2006).[42] In Panel A, the univariate tests show negative and statistically significant CARs of about 1 percent. Similarly, in Panel B, the estimate of the intercept can be interpreted as the average 3-day CAR for firms where the other covariates are held at their mean values. Again, each of these returns is negative and statistically significant with a reaction of about 1 percent. The result of this analysis confirms the presence of valuation information in the conflict minerals disclosures in my sample and provides evidence in support of H1.

## 5.2 Multivariate Analyses

### 5.2.1 Coarsened Exact Matching

Selection concerns arise in my setting because filer and non-filer firms have significant differences on firm characteristics that may also be associated with information asymmetry and voluntary disclosure choice. To mitigate these concerns, I make use of the coarsened exact matching (CEM) technique developed in Iacus, King and Porro (2011) to match firms that filed conflict minerals disclosures with non-disclosing "control" firms when constructing the samples for each of my analyses. I select this matching technique because it has been shown to reduce model dependence and bias relative to other techniques such as propensity score matching (King

[42] Following prior literature, CAR is calculated as the Fama-French three-factor cumulative abnormal return for the [-1,1] and [-2,2] day windows around the Form SD filing date. In the regression-style analysis, because I am interpreting the intercept term of the regression model, I am unable to include fixed effects and maintain a consistent interpretation. To partially address this, I conduct untabulated subsample analyses and my results are consistent within industry and within filing date, suggesting that information content exists independent of industry or filing date choice.

et al., 2011; King and Nielsen, 2019) and has been used in recent accounting literature to address similar concerns (DeFond et al., 2017; Cen et al., 2018; Gallo et al, 2020). [43] Specifically, I match firms on *Size*, *Leverage*, growth opportunities (*MTB*), and industry-adjusted profitability (*ROA*).

I formally test the efficacy of the matching procedure by comparing firm characteristics within the matched sample. As noted above, the comparison for the information asymmetry sample is reported in Table 2, Panel C and the comparison for the voluntary disclosure sample is reported in Table 3, Panel C. These results confirm that the CEM method significantly mitigates covariate imbalances in my sample, which diminishes selection concerns—i.e., the concern that an imbalance in firm attributes between filer and non-filer firms, rather than a difference in mandatory disclosure requirements, is the actual driver of the observed outcomes.

### 5.2.2 Information Asymmetry and Liquidity

In my tests of H2a, I regress *Chg Spread* on *Filer Firm* and a host of control variables and interpret the estimated coefficient on *Filer Firm* as the on-average effect of the Form SD on information asymmetry. I estimate this model across different specifications with a variety of fixed effects and cluster-robust standard errors clustered by Fama-French 48 industry classification. My baseline regression model is then:

$$(1) \qquad Chg\ Spread_i = \beta_0 + \beta_1(Filer\ Firm_i) + \beta_k(Controls_i) + \boldsymbol{\gamma}_i + \epsilon_i$$

where the subscript *i* represents a firm. The coefficient of interest is $\beta_1$, which represents the on-average difference in *Chg Spread* for Form SD filing firms.

[43] In robustness tests, I reconstruct my sample using propensity score matching on these variables and my inferences remain unchanged. Additionally, including other potential matching variables in my CEM procedure results in identical conclusions but significantly restricts the number of filer firm observations with adequate matches.

Table 5 displays the results of this estimation. The coefficient on *Filer Firm* is negative and both statistically and economically significant in each specification, indicating a reduction in information asymmetry around the filing date in support of rejecting the null hypothesis for H2a. Examining column (4), the coefficient on *Filer Firm* represents a 5.5% decrease in bid-ask spread immediately after a firm's Form SD filing. This finding suggests that, on average, the information content in the Form SD filing overlaps with (or is correlated with) the information sets of privately informed investors and that public disclosure of the information reduces existing asymmetry.

Next, I re-estimate equation (1), interacting *Filer Firm* with institutional ownership (*IO Perc*) in Table 6 and further adding prior sustainability concerns (*Prior Event*) in Table 7. In Table 6, *Filer Firm* continues to be negative and statistically significant in each specification, consistent with the observed on-average reduction in information asymmetry. *Filer Firm X IO Perc* is positive and significant in each specification, indicating that firms with more institutional ownership (a proxy for sophisticated investor presence) observe less information asymmetry reduction relative to firms with less institutional ownership, providing evidence in support of H2b. Specifically, a one standard deviation increase in institutional ownership decreases the observed information asymmetry reduction of a Form SD filing by 3.74%. This is consistent with the idea that Form SD helps reduce information asymmetry and that the superior processing abilities of sophisticated investors mitigate this effect.

However, this mitigating effect should not exist in firms where there are no (or limited) potential information gains for institutional investors—i.e., firms where the potential information gleaned from the Form SD significantly overlaps with the pre-existing private information sets of sophisticated investors. To determine those firms, I make use of the RepRisk database to find the negative, supply chain-related sustainability events faced by firms prior to their first conflict

minerals disclosure. Because sophisticated investors are more likely to become aware of material firm events and actively monitor firms' sustainability performance, these events represent a plausible source of informational advantage (Hirschleifer and Teoh, 2003; Eccles et al., 2011).

Table 7 displays the results of this analysis. As before, *Filer Firm* remains negative and statistically significant in each specification and *Filer Firm X IO Perc* remains positive and statistically significant. However, *Filer Firm X Prior Event X IO Perc* is negative and statistically significant in each specification, providing support for the conjecture that institutional investors may already possess some of the information provided in (or correlated with) the Form SD.[44] This indicates that the conflict minerals disclosure helps publicize previously private information held by institutions.[45]

Next, to examine the liquidity effects of the Form SD filing, I again re-estimate equation (1), replacing *Chg Spread* with *Chg Lambda*. The coefficient of interest remains $\beta_1$, which represents the on-average change in liquidity for firms filing Forms SD on or before the first required filing date. Table 8 displays the results of this estimation. The coefficient on *Filer Firm* is negative and statistically significant in each specification, indicating an improvement in liquidity around the filing date in support of H2c. Specifically, firms filing Forms SD observe an on-average 4.7% reduction in Amihud's lambda. This finding suggests that the information asymmetry

[44] RepRisk classifies the severity and media reach of sustainability-related, reputationally damaging events. Their categorization includes a "low," "medium" and "high" category on each dimension. In Table 7, *Prior Event* takes a value of 1 in column (1) when any event has occurred in the two years prior to the filing date, in column (2) when a medium- or high-severity event occurred with low media reach, and in column (3) when a medium- or high-severity event occurred with medium or high media reach.

[45] The coefficient estimate on *Filer Firm X Prior Event X IO Perc* offsets the increase for non-event firms (*Filer Firm X IO Perc*). In untabulated analysis, the sum of these coefficients is insignificantly different from zero at conventional levels.

reduction demonstrated previously reduces the adverse selection risk facing investors and improves the liquidity of the disclosing firm's shares.

Taken together, my results demonstrate that informed investors hold private information that overlaps with (or is correlated with) the information disclosed in the Form SD. The mandated disclosure of this information reduces the information wedge (and improves liquidity) among investors and that reduction is associated with the presence of preexisting sustainability information and the amount of sophisticated processing ability in a firm's investor base.

### 5.2.3 Voluntary Disclosure

For the tests of H3, I use an annual sample (firm-year observations) in a differences-in-differences style design, where a firm's exposure to the disclosure mandate is defined as the treatment and the post-period begins after the first form SD filing. These analyses regress measures of voluntary disclosure (*Fcast Num* and *8-K Count*) on an indicator variable equal to 1 if the firm filed a Form SD in the year of the observation (*Filer Firm X Post),* an indicator variable equal to 1 if the firm filed at Form SD at any time during the sample period (*Filer Firm*), an indicator variable equal to 1 if the date of the observation is on or after the 2014 Form SD filing date (*Post),* as well as a host of control variables. My baseline regression model is then:

$$(2) \qquad VD\ Measures = \beta_0 + \beta_1(Filer\ Firm_{it}\ X\ Post_{it}) + \beta_2(Filer\ Firm_{it}) + \beta_3(Post_{it}) + \beta_k(Controls_{it}) + \boldsymbol{\gamma}_{it} + \epsilon_{it}$$

where the subscript *i* represents a firm and *t* represents the year of the observation. I estimate these tests across a variety of fixed effects and, in some specifications, include lagged values of the dependent variable to control for time-invariant firm and industry characteristics, time trends,

and other correlated omitted variables. To control for within-firm error dependence, I use cluster-robust standard errors clustered at the firm level.

I interpret $\beta_1$ as the parameter of interest, which represents the change in the voluntary disclosure measure for firms filing Forms SD on or before the first filing deadline in 2014. A negative coefficient on $\beta_1$ in each test is consistent with a reduction in voluntary disclosure after the Form SD filing while a positive coefficient would suggest an increase in voluntary disclosure. Given the observed information asymmetry decrease in the results of H2, I predict that the on-average effect will be a reduction in voluntary disclosure, consistent with a substitution effect.

Table 9 presents the regression results for the management forecast frequency test. I find a negative and statistically significant coefficient on *Filer Firm X Post*, consistent with firms decreasing their voluntary disclosure after mandatorily disclosing on Form SD. In economic terms, a firm issues, on average, one fewer management forecast for every five to seven issued after filing Form SD.[46] This finding provides support for H3 and demonstrates that managers do respond to the change in their information environments by adjusting their voluntary disclosure behavior.

In Table 10, I estimate cross-sectional cuts that add support to this interpretation of the decrease in voluntary disclosure. Specifically, I examine managers' voluntary disclosure behavior across levels of proprietary costs (using a Herfindahl index to capture competition where greater competition is associated with higher proprietary costs) and changes in information asymmetry. For firms facing more competition, additional disclosure of information

[46] While this finding is not economically large, the result is consistent with management's incentive to decrease voluntary disclosure given the increase in liquidity after the filing of Form SD.

is more costly and managers are incentivized to reduce disclosure when possible. In line with this theory, in columns (1) and (2) I observe that firms facing greater competition (*Filer Firm X Post X High Competition* and *Filer Firm X Post X Competition*) are most likely to decrease voluntary disclosure after the mandate.

With respect to information asymmetry, while an increase in liquidity may allow managers to reduce their voluntary disclosure behavior, an increase in information asymmetry may require additional, explanatory disclosure by managers, resulting in increased voluntary disclosure. In columns (3) and (4), I observe that firms that faced a decrease in information asymmetry following Form SD filing choose to decrease voluntary disclosure activity while firms facing large increases in information asymmetry actually increase their voluntary disclosure behavior overall.[47] This is consistent with managers choosing to guide investors after a disclosure that was difficult to understand or otherwise generated confusion (Guay et al., 2016).

In Table 11, I repeat my voluntary disclosure analysis on Forms 8K following the 2014 Form SD mandate and observe a similar reduction in voluntary disclosure after the mandate's implementation.[48] This is consistent with managers again exercising discretion in their voluntary disclosure frequency following the mandatory disclosure of new information and in the presence of liquidity benefits from that mandatory disclosure. Taken together, my findings demonstrate that managers are sensitive to the changes in the information environment evoked by new

[47] An F-test demonstrates that the sum of the increase from *Filer Firm X Post X High Spread* and the decrease from *Filer Firm X Post* is positive and statistically significant at the 99% level. In column (4), the sum is significantly positive at the 90% confidence level.
[48] In untabulated analysis, I re-estimate this model on discretionary Forms 8-K (items 7.01 and 8.01) and find similar results.

mandatory sustainability disclosure regulations and adapt their voluntary disclosure strategies in response.

### 5.2.4 Additional Analyses

**Parallel Trends**

A key component underlying my differences-in-differences analysis is the parallel trends assumption. In short, in the absence of the conflict minerals disclosure mandate, the difference in voluntary disclosure behavior between filer and non-filer firms should have remained constant for my analyses to yield meaningful results. Although this assumption is fundamentally untestable (the counterfactual is unobservable), I perform both graphical and statistical analyses that provide supporting evidence for this assumption.

First, Figure 1 plots the average *Forecast Count* by filing status and filing year. In the pre-2014 period, these lines appear to move in parallel. Beginning in 2014, both groups trend downward with the Form SD filing group declining significantly more than the control group.[49] After the mandatory filing period ends in 2016, the voluntary disclosure frequency appears to rise slightly.

Additionally, in Table 12, I regress *Forecast Count* on *Filer Firm*, indicator variables for each filing year, and the interaction of these variables. *Filer Firm* is significantly different from 0, indicating that filing firms voluntarily disclose more often than non-filer firms. However, the interactions of *Filer Firm* and the indicator variables for 2012 and 2013 are insignificant, demonstrating that the average difference between treatment and control did not change from the

[49] While I cannot fully explain the decrease in the control group, industry peers that did not file a Form SD may have experienced spillover effects that influenced their voluntary disclosure behavior. Other events in 2014 may have also impacted this overall disclosure trend.

difference observed in the reference year, 2011. Beginning in 2014, filer firms observe a greater decrease in voluntary disclosure than non-filing firms, consistent with my hypothesized treatment effect. While this evidence is not dispositive, the evidence suggests that the parallel trends assumption may hold in this setting.

**Horizon of Information Asymmetry Effects**

Finally, it remains unclear whether the observed change in information asymmetry is persistent beyond the initial reaction to the filing. If the initial reaction to the disclosure is significant but reverts soon thereafter, it is unlikely that managers would react to the change by altering their disclosure behavior. In Table 13, I restrict the sample to Form SD filing firms and examine the persistence of the information asymmetry reduction resulting from Form SD by re-calculating the *Chg Spread* variable as the difference between the average daily spread over the 15-, 30-, 60-, 90-, and 180-day windows beginning with the Form SD filing date and the average daily spread over the 45-day window beginning 50 days prior to and ending 5 days prior to the Form SD filing date.[50] I find that the negative relationship exists over the 15-, 30- and 45-day windows following the Form SD filing and the coefficient estimate declines monotonically, suggesting that the information effects persist between 45 and 90 days. A linear test of coefficients on columns (1) – (3) shows that the sum of the intercept and the *Spread Decrease* variable is negative and significantly different from 0, demonstrating the on-average negative effect for the sample. I interpret these findings to suggest that the spread changes are not simply temporary market reactions that revert in the days following the filing and firms appear to observe long-run

[50] To aid interpretation of the intercept, I omit fixed effects from these specifications and center each control variable. Accordingly, the intercept can be interpreted as the mean *Chg Spread* when all continuous variables are held at their means and dichotomous variables are equal to 0. In untabulated analyses, I recalculate the reference periods as the 15-, 30-, 60-, 90-, and 180-day windows beginning 20, 35, 65, 95, and 185 days prior to and ending 5 days prior to the Form SD filing date. Inferences remain unchanged in these alternative scenarios.

changes in the information asymmetry facing investors following their conflict minerals disclosures.

## Chapter 6 Concluding Remarks

Given the global push towards sustainability in corporate activities, firms are facing increased regulation on both their activities and the disclosure of those activities. As this trend towards mandatory disclosure as a public policy tool increases, it becomes more important to examine the potential consequences and to provide evidence that informs the policy debate. In particular, while these disclosure mandates are often used to shape corporate behavior and to compel firms to adhere to social norms, we know very little about the value and costs of these disclosures to the firm and its stakeholders.

To that end, this study provides evidence that mandatory sustainability disclosures have consequences for firm information environments. Specifically, I examine the effect of the conflict minerals disclosure mandate included in Dodd-Frank and find that a firm's conflict minerals disclosures decrease the information asymmetry among investors and improve liquidity. These effects persist beyond the initial disclosure and are consistent with investors gaining new information from the disclosures that partially overlaps with private information previously held by more sophisticated investors.

I verify this interpretation by examining the relationship between institutional ownership and the change in the information asymmetry around the conflict minerals disclosure. On average, institutional investors appear to gain an information advantage from the firm's conflict minerals disclosures due to their superior processing abilities and expertise at translating complex and qualitative information into insights about firm value. However, for the subsample

of firms where institutions are most likely to already possess similar private information, I find that institutions are unable to generate significant incremental information from the conflict minerals disclosure and overall information asymmetry decreases. These asymmetry effects also engender changes in firms' voluntary disclosure behavior. I examine managers' earnings guidance and Form 8-K issuances after the conflict minerals disclosure mandate and find that managers increase (decrease) their voluntary disclosure behavior when the information asymmetry facing investors increases (decreases).

More broadly, my results show that mandating sustainability disclosures in an effort to achieve a social policy objective can have unintended consequences for firms and their stakeholders. These disclosures appear to be used by investors to value the firm, to learn about the firm's supply chain and to generate an information advantage over less informed investors. While this can result in a richer information environment overall, more research is needed on the specific regulatory and disclosure characteristics that generate these information benefits. Policymakers should consider these potential effects when determining the value of existing policies and when considering the costs and benefits associated with a future mandate.

## Appendix A – Variable Definitions

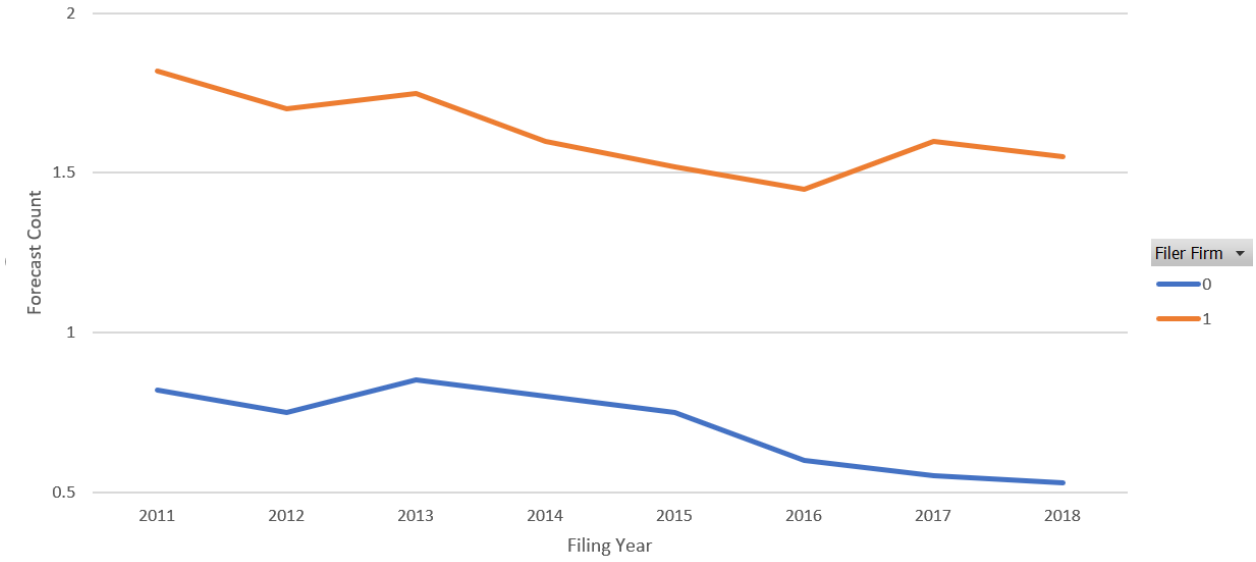
| Variable | Description |
|---|---|
| **Dependent Variables** | |
| Cumulative Abnormal Return (CAR) | The sum of the abnormal market returns estimated using the Fama French 3-factor model over the 3- and 5- day event windows. |
| Bid-Ask Spread | $\frac{(\text{Ask}_t - \text{Bid}_t)}{\frac{Ask_t + Bid_t}{2}}$ x 100, where Ask_t is the quoted closing ask on day t, Bid_t is the quoted closing bid. |
| Chg Spread | The difference between the average bid-ask spread over the three-day window beginning with the Form SD filing and the 45-day average beginning 50 days prior to and ending 5 days prior to the Form SD filing, multiplied by 100. |
| Amihud's Lambda | $\frac{\lvert Ret_t \rvert}{Volume\_t} \; x \; 10^6$, where \|Ret_t\| is the absolute daily return on day t and Volume_t is the daily dollar volume of the stock. |
| Chg Lambda | The difference between the average lambda over the three-day window beginning with the Form SD filing and the 45-day average beginning 50 days prior to and ending 5 days prior to the Form SD filing. |
| Forecast Count | The count of annual EPS forecasts issued by the firm during the year. |
| 8K Count | The count of Forms 8K issued by the firm during the year. |
| **Independent Variables** | |
| Filer Firm | An indicator variable equal to 1 if the firm filed a Form SD in 2014. |
| Post | An indicator variable equal to 1 if the date of the observation is on or after the 2014 Form SD filing date. |
| Size | The natural logarithm of total assets. |

| | |
|---|---|
| MTB | The sum of the current market value of the firm plus the book value of liabilities, divided by total assets. |
| Leverage | The sum of long-term debt and short-term debt divided by total assets. |
| ROA | The industry adjusted income before extraordinary items for the year divided by total assets. |
| SD(Ret) | The standard deviation of the preceding 12 monthly buy-and-hold returns, multiplied by 100. |
| Returns | The annual buy-and-hold return over the 12 months preceding the observation date. |
| Log(Volume) | The natural logarithm of the average volume over the 5 days preceding the Form SD filing date. |
| Loss | An indicator variable equal to 1 if the previous year's net income was less than 0. |
| Following | The natural logarithm of 1 plus the number of analysts following the firm. |
| Special Items | The value of special items reported as a separate component of income from continuing operations scaled by total assets. |
| Dispersion | The standard deviation of analysts' annual earnings forecasts scaled by total assets. |
| Lag Forecast Count | The prior year's value of Forecast Count. |
| IO Perc | The percentage of common shares owned by institutional investors. |
| Prior Event – All Events | An indicator variable equal to 1 if any supply chain-related sustainability concern occurred in the prior two years. |
| Prior Event – Severe & Low (High) Reach | An indicator variable equal to 1 if a supply chain-related sustainability concern occurred in the prior two years that is classified by RepRisk as medium or high severity but low media reach. |
| Prior Event – Severe & High Reach | An indicator variable equal to 1 if a supply chain-related sustainability concern occurred in the prior two years that is classified by RepRisk as medium or high severity but medium or high media reach. |
| Competition | The observation's Herfindahl index multiplied by -1. |

| | |
|---|---|
| High Competition | An indicator variable equal to 1 if the observation's Competition value falls above (below) the median. |
| High Spread | An indicator variable equal to 1 if the observation's Chg Spread value falls above the median. |
| Spread Decrease | An indicator variable equal to 1 if the observation's Chg Spread value is negative. |

## Appendix B – Tables and Figures

**Figure 1: Parallel Trends Assessment - Average Forecast Count by Filing Year and Status**



## Table 1: Sample Composition and Frequency Tables

**Table 1, Panel A: Fama-French 10 Industry Classification Across Filing Status in 2014**

| Industry | All Firms | Filer Firms |
|---|---|---|
| Consumer NonDurables | 4.18% | 4.23% |
| Consumer Durables | 2.19% | 6.61% |
| Manufacturing | 10.58% | 26.34% |
| Oil, Gas, and Coal Extraction and Products | 5.18% | 2.73% |
| Business Equipment | 17.72% | 33.92% |
| Telephone and Television Transmission | 2.64% | 1.06% |
| Wholesale, Retail, and Some Services | 7.84% | 8.81% |
| Healthcare, Medical Equipment, and Drugs | 9.58% | 10.57% |
| Utilities | 2.89% | 0.53% |
| Other | 37.21% | 5.20% |
| Total | 100% | 100% |

**Table 1, Panel B: Sample Breakdown by Filing Type Across All Mandatory Filing Years**

| Filing Year | Form SD Only | Form SD + CMR | Total |
|---|---|---|---|
| 2014 | 201 | 746 | 947 |
| 2015 | 168 | 735 | 903 |
| 2016 | 155 | 722 | 877 |
| Total | 524 | 2,203 | 2,727 |

**Table 1, Panel C: Sample Breakdown by Conclusion Across Available Mandatory Filing Years**

| Filing Year | RCOI Only | DRC Conflict Free | DRC Conflict Indeterminable | No Minerals/ Other | Total |
|---|---|---|---|---|---|
| 2015 | 160 | 67 | 594 | 82 | 903 |
| 2016 | 147 | 95 | 581 | 54 | 877 |
| Total | 307 | 162 | 1,175 | 136 | 1,780 |

**Table 2: Descriptive Statistics and Matching Analysis – Information Asymmetry Sample**

**Table 2, Panel A: Summary Statistics – Matched Filer Firms in Info. Asymmetry Sample**

| Variable | N | Mean | S.D. | Q1 | Median | Q3 |
|---|---|---|---|---|---|---|
| Chg Spread | 636 | -2.01 | 16.60 | -1.64 | -0.2 | 0.47 |
| Spread Decrease | 636 | 0.64 | 0.48 | 0 | 1 | 1 |
| Size | 636 | 7.09 | 1.88 | 5.73 | 7.01 | 8.38 |
| MTB | 636 | 1.74 | 0.90 | 1.16 | 1.53 | 2.07 |
| Leverage | 636 | 0.17 | 0.16 | 0 | 0.16 | 0.27 |
| ROA | 636 | 0.02 | 0.10 | -0.01 | 0.02 | 0.07 |
| SD(Returns) | 636 | 9.01 | 4.83 | 5.68 | 7.92 | 10.85 |
| Returns | 636 | 0.45 | 0.48 | 0.15 | 0.40 | 0.64 |
| Log(Volume) | 636 | 12.47 | 1.72 | 11.38 | 12.59 | 13.7 |

**Table 2, Panel B: Summary Statistics – Matched Non-Filer Firms in Info. Asymmetry Sample**

| Variable | N | Mean | S.D. | Q1 | Median | Q3 |
|---|---|---|---|---|---|---|
| Chg Spread | 1,327 | 1.08 | 28.13 | -1.49 | -0.14 | 0.98 |
| Spread Decrease | 1,327 | 0.58 | 0.49 | 0 | 1 | 1 |
| Size | 1,327 | 7.08 | 1.90 | 5.71 | 6.91 | 8.44 |
| MTB | 1,327 | 1.73 | 0.91 | 1.12 | 1.53 | 2.05 |
| Leverage | 1,327 | 0.17 | 0.16 | 0 | 0.15 | 0.27 |
| ROA | 1,327 | 0.02 | 0.09 | -0.01 | 0.02 | 0.07 |
| SD(Returns) | 1,327 | 9.20 | 5.12 | 5.64 | 7.95 | 10.96 |
| Returns | 1,327 | 0.41 | 0.53 | 0.13 | 0.34 | 0.55 |
| Log(Volume) | 1,327 | 12.37 | 1.83 | 11.35 | 12.53 | 13.61 |

**Table 2, Panel C: Matching Balance Evaluation – Information Asymmetry Sample**

| | Before Matching | | | After Matching | | |
|---|---|---|---|---|---|---|
| Variable | Filer Firms | All Other Firms | Difference | Filer Firms | All Other Firms | Difference |
| Chg Spread | -1.66 | 1.22 | **-2.88** | -2.01 | 1.08 | **-3.09** |
| Spread Decrease | 0.64 | 0.60 | **0.04** | 0.64 | 0.58 | **0.06** |
| Size | 7.18 | 7.16 | **0.02** | 7.09 | 7.08 | 0.01 |
| MTB | 1.99 | 1.88 | **0.11** | 1.74 | 1.73 | 0.01 |
| Leverage | 0.18 | 0.23 | **-0.05** | 0.17 | 0.17 | 0.00 |
| ROA | 0.01 | -0.09 | **0.10** | 0.02 | 0.02 | 0.00 |
| SD(Returns) | 9.22 | 9.62 | **-0.39** | 9.01 | 9.20 | -0.19 |
| Returns | 0.46 | 0.41 | **0.05** | 0.45 | 0.41 | 0.04 |
| Log(Volume) | 12.69 | 12.14 | **0.55** | 12.47 | 12.37 | 0.10 |

*Bolded values are significant at the 95% confidence level.

**Table 3: Descriptive Statistics and Matching Analysis – Voluntary Disclosure Sample**

**Table 3, Panel A: Summary Statistics – Matched Filer Firms in Voluntary Disclosure Sample**

| Variable | N | Mean | S.D. | Q1 | Median | Q3 |
|---|---|---|---|---|---|---|
| Forecast Count | 1,616 | 1.65 | 2.50 | 0 | 0 | 4 |
| Spread Decrease | 1,616 | 0.58 | 0.49 | 0 | 1 | 1 |
| Size | 1,616 | 7.08 | 1.88 | 5.74 | 7.03 | 8.33 |
| MTB | 1,616 | 1.62 | 0.83 | 1.10 | 1.44 | 1.90 |
| Leverage | 1,616 | 0.16 | 0.16 | 0 | 0.15 | 0.27 |
| ROA | 1,616 | 0.03 | 0.11 | -0.01 | 0.03 | 0.08 |
| SD(Returns) | 1,616 | 9.28 | 4.61 | 6.13 | 8.25 | 11.09 |
| Returns | 1,616 | 0.21 | 0.40 | -0.02 | 0.16 | 0.38 |
| Log(Volume) | 1,616 | 12.41 | 1.93 | 11.32 | 12.50 | 13.70 |
| Loss | 1,616 | 0.22 | 0.42 | 0 | 0 | 0 |
| Following | 1,616 | 2.12 | 0.89 | 1.61 | 2.20 | 2.77 |
| Special Items | 1,616 | -0.01 | 0.03 | -0.01 | 0 | 0 |
| Dispersion | 1,525 | 0.05 | 0.14 | 0.01 | 0.02 | 0.04 |

**Table 3, Panel B: Summary Statistics – Matched Non-Filer Firms in Voluntary Disclosure Sample**

| Variable | N | Mean | S.D. | Q1 | Median | Q3 |
|---|---|---|---|---|---|---|
| Forecast Count | 2,997 | 1.15 | 2.15 | 0 | 0 | 1 |
| Spread Decrease | 2,997 | 0.54 | 0.50 | 0 | 1 | 1 |
| Size | 2,997 | 7.10 | 1.90 | 5.76 | 7.04 | 8.34 |
| MTB | 2,997 | 1.61 | 0.85 | 1.06 | 1.39 | 1.93 |
| Leverage | 2,997 | 0.17 | 0.16 | 0.01 | 0.14 | 0.27 |
| ROA | 2,997 | 0.03 | 0.11 | 0 | 0.03 | 0.08 |
| SD(Returns) | 2,997 | 9.52 | 5.33 | 5.80 | 8.31 | 11.83 |
| Returns | 2,997 | 0.22 | 0.45 | -0.03 | 0.16 | 0.39 |
| Log(Volume) | 2,997 | 12.29 | 1.97 | 11.21 | 12.48 | 13.59 |
| Loss | 2,997 | 0.21 | 0.41 | 0 | 0 | 0 |
| Following | 2,997 | 2.05 | 0.98 | 1.39 | 2.20 | 2.83 |
| Special Items | 2,997 | -0.01 | 0.02 | -0.01 | 0 | 0 |
| Dispersion | 2,572 | 0.08 | 0.42 | 0.01 | 0.02 | 0.04 |

**Table 3, Panel C: Matching Balance Evaluation – Voluntary Disclosure Sample**

| | Before Matching | | | After Matching | | |
|---|---|---|---|---|---|---|
| Variable | Filer Firms | All Other Firms | Difference | Filer Firms | All Other Firms | Difference |
| Forecast Count | 1.67 | 0.75 | **0.92** | 1.65 | 1.15 | **0.50** |
| Spread Decrease | 0.59 | 0.51 | **0.08** | 0.58 | 0.54 | **0.04** |
| Size | 7.14 | 6.93 | **0.21** | 7.08 | 7.10 | -0.02 |
| MTB | 1.82 | 1.70 | **0.12** | 1.62 | 1.61 | 0.01 |
| Leverage | 0.18 | 0.22 | **-0.04** | 0.16 | 0.17 | -0.01 |
| Adj. ROA | 0.02 | -0.08 | **0.11** | 0.03 | 0.03 | 0.00 |
| SD(Returns) | 9.58 | 10.26 | **-0.67** | 9.28 | 9.52 | -0.23 |
| Returns | 0.22 | 0.21 | 0.01 | 0.21 | 0.22 | -0.01 |
| Log(Volume) | 12.46 | 11.38 | **1.07** | 12.41 | 12.29 | 0.12 |
| Loss | 0.26 | 0.28 | **-0.02** | 0.22 | 0.21 | 0.01 |
| Following | 2.16 | 1.75 | **0.41** | 2.12 | 2.05 | **0.07** |
| Special Items | -0.01 | -0.01 | **0.00** | -0.01 | -0.01 | 0.00 |
| Dispersion | 0.06 | 0.13 | **-0.08** | 0.05 | 0.08 | **-0.03** |

*Bolded values are significant at the 95% confidence level.

**Table 4, Panel A: Event Study of Cumulative Abnormal Returns Around 2014 Filings (H1)**

| Window | N | CAR | t-Stat | p-Value | Patell's Z | p-Value |
|---|---|---|---|---|---|---|
| (-1, +1) | 636 | -0.009 | -8.447 | 0.000 | -9.212 | 0.000 |
| (-2, +2) | 636 | -0.013 | -7.034 | 0.000 | -12.413 | 0.000 |

Cumulative abnormal return is defined as the sum of the 3- and 5-day abnormal returns calculated using the Fama-French 3 factor model.

**Table 4, Panel B: Cumulative Abnormal Returns Around 2014 Filings (H1)**

| | (1) | (2) | (3) |
|---|---|---|---|
| VARIABLES | CAR | CAR | CAR |
| Constant | -0.009*** | -0.009*** | -0.009*** |
| | (7.672) | (7.681) | (7.693) |
| Size | 0.004*** | 0.004*** | 0.004*** |
| | (5.881) | (5.663) | (4.038) |
| MTB | -0.000 | -0.000 | 0.000 |
| | (0.158) | (0.182) | (0.000) |
| Leverage | -0.006 | -0.006 | -0.001 |
| | (0.617) | (0.557) | (0.085) |
| ROA | | 0.003 | -0.000 |
| | | (0.197) | (0.018) |
| SD(Ret) | | | -0.000 |
| | | | (1.277) |
| Ann Ret | | | -0.009* |
| | | | (1.942) |
| Observations | 636 | 636 | 636 |
| Adjusted R-squared | 0.037 | 0.035 | 0.053 |

This table examines the signed cumulative abnormal returns around the filing of Forms SD in 2014. Panel A displays an event study of CAR using the Fama-French 3-factor model over 3- and 5-day windows around the 2014 Form SD filing. Panel B displays regression where the dependent variable is 3-day CAR. CAR is the signed cumulative abnormal return for the window around a Form SD filing. Size is the natural logarithm of total assets. MTB is the sum of the current market value of the firm, plus the book value of liabilities divided by total assets. Leverage is the sum of long-term debt and short-term debt divided by total assets. ROA is the industry adjusted income before extraordinary items for the year divided by total assets. SD(Ret) is equal to the standard deviation of the preceding 12 monthly buy and hold returns. Ann Ret is equal to the annual buy and hold return over the 12 months preceding the observation date. All independent variables are standardized to facilitate interpretation of the intercept and for coefficient comparability.

Standard errors are clustered by industry and absolute t-statistics are shown in parentheses.

*** p<.01, ** p<.05, * p<0.1

**Table 5: Change in Information Asymmetry Around 2014 Form SD Filing Date (H2a)**

| VARIABLES | (1) Chg Spread | (2) Chg Spread | (3) Chg Spread | (4) Chg Spread | (5) Chg Spread |
|---|---|---|---|---|---|
| Filer Firm | -2.788** | -2.477** | -5.621*** | -5.474*** | -5.578*** |
| | (2.633) | (2.596) | (3.160) | (3.229) | (3.148) |
| *Controls* | | | | | |
| Size | 0.074 | 0.068 | 0.500 | 0.498 | 0.312 |
| | (0.100) | (0.092) | (0.647) | (0.643) | (0.395) |
| MTB | 0.999 | 0.973 | 1.004 | 0.991 | 0.778 |
| | (1.386) | (1.354) | (1.393) | (1.361) | (1.071) |
| Leverage | -0.701 | -0.721 | -2.167 | -2.197 | -1.198 |
| | (0.126) | (0.130) | (0.318) | (0.324) | (0.166) |
| ROA | -13.838 | -13.803 | -23.257* | -23.240* | -22.558 |
| | (1.677) | (1.652) | (1.721) | (1.712) | (1.605) |
| SD(Ret) | 0.312 | 0.313 | 0.260 | 0.260 | 0.249 |
| | (1.463) | (1.467) | (1.069) | (1.068) | (1.004) |
| Returns | -4.340** | -4.338** | -4.538* | -4.535* | -4.417* |
| | (2.203) | (2.213) | (1.948) | (1.959) | (1.865) |
| Log(Volume) | -0.346 | -0.340 | -0.412 | -0.409 | -0.303 |
| | (0.410) | (0.405) | (0.481) | (0.479) | (0.354) |
| Observations | 1,963 | 1,963 | 1,963 | 1,963 | 1,963 |
| Adjusted R-squared | 0.013 | 0.012 | 0.029 | 0.028 | 0.028 |
| Date FE | NO | YES | NO | YES | NO |
| Industry FE | NO | NO | YES | YES | NO |
| Industry-Date FE | NO | NO | NO | NO | YES |

This table examines the changes in bid-ask spread around the filing of Forms SD in 2014. The sample is comprised of disclosing firms (*Filer Firm*) and CEM-matched control firms.
*Chg Spread* is equal to the difference between the average daily bid-ask spread over the period between 0 and 2 days after the observation date and the average daily bid-ask spread over the period between 5 and 50 days prior to the observation date, multiplied by 100. *Filer Firm* is an indicator variable equal to 1 if the firm filed a Form SD in 2014 and 0 otherwise. *Size* is the natural logarithm of total assets. *MTB* is the sum of the current market value of the firm, plus the book value of liabilities divided by total assets. *ROA* is the industry-adjusted income before extraordinary items for the year divided by total assets. *Leverage* is the sum of long-term debt and short-term debt divided by total assets. *SD(Ret)* is equal to the standard deviation of the preceding 12 monthly buy-and-hold returns multiplied by 100. *Returns* is equal to the annual buy-and-hold return over the 12 months preceding the observation month. *Log(Volume)* is the natural logarithm of the average volume over the 5 days preceding the Form SD filing date.
Standard errors are clustered by Fama-French 48 industry classification and absolute t-statistics are shown in parentheses. *** p<.01, ** p<.05, * p<0.1

**Table 6: Change in Information Asymmetry - Institutional Ownership (H2b)**

| VARIABLES | (1) Chg Spread | (2) Chg Spread | (3) Chg Spread | (4) Chg Spread | (5) Chg Spread |
|---|---|---|---|---|---|
| Filer Firm X IO Perc | 0.082** | 0.082** | 0.106*** | 0.106*** | 0.102*** |
| | (2.534) | (2.550) | (2.829) | (2.846) | (2.860) |
| Filer Firm | -7.533** | -7.305** | -11.609*** | -11.579*** | -11.444*** |
| | (2.622) | (2.667) | (3.516) | (3.618) | (3.739) |
| IO Perc | -0.032* | -0.032* | -0.050* | -0.050* | -0.052** |
| | (1.809) | (1.803) | (1.957) | (1.956) | (2.047) |
| *Controls* | | | | | |
| Size | 0.129 | 0.125 | 0.612 | 0.611 | 0.405 |
| | (0.171) | (0.166) | (0.779) | (0.777) | (0.511) |
| MTB | 1.069 | 1.054 | 1.135 | 1.132 | 0.967 |
| | (1.474) | (1.463) | (1.467) | (1.456) | (1.233) |
| Leverage | -1.340 | -1.341 | -3.195 | -3.201 | -2.132 |
| | (0.241) | (0.242) | (0.460) | (0.464) | (0.290) |
| ROA | -13.950 | -13.938 | -23.992* | -23.985* | -23.150 |
| | (1.669) | (1.651) | (1.797) | (1.789) | (1.670) |
| SD(Ret) | 0.309 | 0.309 | 0.237 | 0.237 | 0.223 |
| | (1.467) | (1.469) | (1.007) | (1.005) | (0.933) |
| Returns | -4.225** | -4.225** | -4.421* | -4.420* | -4.298* |
| | (2.185) | (2.194) | (1.949) | (1.959) | (1.856) |
| Log(Volume) | -0.316 | -0.313 | -0.360 | -0.359 | -0.223 |
| | (0.383) | (0.380) | (0.440) | (0.440) | (0.276) |
| Observations | 1,963 | 1,963 | 1,963 | 1,963 | 1,963 |
| Adjusted R-squared | 0.015 | 0.014 | 0.034 | 0.032 | 0.033 |
| Date FE | NO | YES | NO | YES | NO |
| Industry FE | NO | NO | YES | YES | NO |
| Industry-Date FE | NO | NO | NO | NO | YES |

This table examines the changes in bid-ask spread around the filing of Forms SD in 2014 for firms with varying levels of institutional ownership. The sample is comprised of disclosing firms (*Filer Firm*) and CEM-matched control firms.

*Chg Spread* is equal to the difference between the average daily bid-ask spread over the period between 0 and 2 days after the observation date and the average daily bid-ask spread over the period between 5 and 50 days prior to the observation date, multiplied by 100. *Filer Firm* is an indicator variable equal to 1 if the firm filed a Form SD in 2014 and 0 otherwise. *IO Perc* is the percentage of shares outstanding held by institutional investors multiplied by 100. *Size* is the natural logarithm of total assets. *MTB* is the sum of the current market value of the firm, plus the book value of liabilities divided by total assets. *ROA* is the industry-adjusted income before extraordinary items for the year divided by total assets. *Leverage* is the sum of long-term debt and short-term debt divided by total assets. *SD(Ret)* is equal to the standard deviation of the preceding 12 monthly buy-and-hold returns multiplied by 100. *Returns* is equal to the annual buy-and-hold return over the 12 months preceding the observation month. *Log(Volume)* is the natural logarithm of the average volume over the 5 days preceding the Form SD filing date. Standard errors are clustered by Fama-French 48 industry classification and absolute t-statistics are shown in parentheses. *** p<.01, ** p<.05, * p<0.1

**Table 7: Change in Information Asymmetry - Presence of Private Information**

| VARIABLES | (1) All Events | (2) Severe & Low Reach | (3) Severe & High Reach |
|---|---|---|---|
| Filer Firm X Prior Event X IO Perc | -0.115* | -0.142** | -0.153** |
| | (1.793) | (2.333) | (2.408) |
| Filer Firm X IO Perc | 0.110*** | 0.110*** | 0.110*** |
| | (2.849) | (2.884) | (2.874) |
| Filer Firm X Prior Event | 10.518* | 11.366** | 13.319*** |
| | (1.948) | (2.365) | (2.801) |
| Prior Event X IO Perc | 0.045 | 0.053 | 0.074** |
| | (1.058) | (1.655) | (2.488) |
| Filer Firm | -12.115*** | -11.972*** | -12.104*** |
| | (3.640) | (3.635) | (3.659) |
| Prior Event | -2.951 | -3.425 | -5.978*** |
| | (0.929) | (1.234) | (3.083) |
| IO Perc | -0.051* | -0.050* | -0.051* |
| | (1.923) | (1.950) | (1.967) |
| Observations | 1,963 | 1,963 | 1,963 |
| Adjusted R-squared | 0.031 | 0.031 | 0.031 |
| Controls | YES | YES | YES |
| Date FE | YES | YES | YES |
| Industry FE | YES | YES | YES |

This table examines the changes in bid-ask spread around the filing of Forms SD in 2014 for firms with varying levels of institutional ownership and previous supply-chain related sustainability concerns. The sample is comprised of disclosing firms (*Filer Firm*) and CEM-matched control firms. Each column lists a different type of sustainability event, as defined by RepRisk.

*Prior Event* is an indicator variable equal to 1 if the firm observed a prior sustainability concern of the type listed in the column header. Column (1) sets Prior Event equal to 1 if any supply chain-related sustainability concern occurred in the prior two years. Column (2) sets Prior Event equal to 1 if the firm observed a medium or high severity supply chain-related sustainability event that received minimal press coverage. Column (3) sets Prior Event equal to 1 if the firm observed a medium or high severity supply chain-related sustainability event that received medium or high press coverage.

The independent variable is *Chg Spread* and is equal to the difference between the average daily bid-ask spread over the period between 0 and 2 days after the observation date and the average daily bid-ask spread over the period between 5 and 50 days prior to the observation date, multiplied by 100. *Filer Firm* is an indicator variable equal to 1 if the firm filed a Form SD in 2014 and 0 otherwise. *IO Perc* is the percentage of shares outstanding held by institutional investors multiplied by 100. Controls are unchanged from previous tables and are defined in full in Appendix A.

Standard errors are clustered by Fama-French 48 industry classification and absolute t-statistics are shown in parentheses. *** p<.01, ** p<.05, * p<0.1

**Table 8: Change in Liquidity Around 2014 Form SD Filing Date (H2c)**

| VARIABLES | (1) Chg Lambda | (2) Chg Lambda | (3) Chg Lambda | (4) Chg Lambda | (5) Chg Lambda |
|---|---|---|---|---|---|
| Filer Firm | -0.008* | -0.009* | -0.047** | -0.048** | -0.054** |
| | (1.758) | (1.744) | (2.173) | (2.207) | (2.020) |
| *Controls* | | | | | |
| Size | -0.005 | -0.005 | 0.004 | 0.004 | 0.002 |
| | (0.326) | (0.326) | (0.258) | (0.258) | (0.148) |
| MTB | 0.014 | 0.014 | 0.007 | 0.007 | 0.007 |
| | (1.002) | (0.976) | (0.463) | (0.452) | (0.435) |
| Leverage | -0.002 | -0.001 | -0.041 | -0.041 | -0.021 |
| | (0.032) | (0.024) | (0.471) | (0.471) | (0.220) |
| ROA | -0.122 | -0.123 | -0.203* | -0.205* | -0.193 |
| | (1.321) | (1.315) | (1.732) | (1.732) | (1.523) |
| SD(Ret) | 0.002 | 0.002 | 0.001 | 0.001 | 0.001 |
| | (0.554) | (0.559) | (0.386) | (0.398) | (0.366) |
| Returns | -0.030 | -0.030 | -0.027 | -0.027 | -0.028 |
| | (1.109) | (1.113) | (0.829) | (0.837) | (0.837) |
| Log(Volume) | 0.006 | 0.006 | 0.001 | 0.001 | 0.001 |
| | (0.311) | (0.311) | (0.042) | (0.043) | (0.076) |
| Observations | 1,963 | 1,963 | 1,963 | 1,963 | 1,963 |
| Adjusted R-squared | 0.014 | 0.012 | 0.019 | 0.019 | 0.020 |
| Year FE | NO | YES | NO | YES | NO |
| Industry FE | NO | NO | YES | YES | NO |
| Industry-Year FE | NO | NO | NO | NO | YES |

This table examines the changes in Amihud's lambda around the filing of Forms SD in 2014. The sample is comprised of disclosing firms (*Filer Firm*) and CEM-matched control firms.

*Chg Lambda* is equal to the difference between the average daily Amihud's lambda over the period between 0 and 2 days after the observation date and the average daily Amihud's lambda over the period between 5 and 50 days prior to the observation date. *Filer Firm* is an indicator variable equal to 1 if the firm filed a Form SD in 2014 and 0 otherwise. *Size* is the natural logarithm of total assets. *MTB* is the sum of the current market value of the firm, plus the book value of liabilities divided by total assets. *ROA* is the industry-adjusted income before extraordinary items for the year divided by total assets. *Leverage* is the sum of long-term debt and short-term debt divided by total assets. *SD(Ret)* is equal to the standard deviation of the preceding 12 monthly buy-and-hold returns multiplied by 100. *Returns* is equal to the annual buy-and-hold return over the 12 months preceding the observation month. *Log(Volume)* is the natural logarithm of the average volume over the 5 days preceding the Form SD filing date.

Standard errors are clustered by Fama-French 48 industry classification and absolute t-statistics are shown in parentheses.

*** p<.01, ** p<.05, * p<0.1

**Table 9: Count of Annual Earnings Forecasts Around 2014 Form SD Filing (H3)**

| VARIABLES | (1) Forecast Count | (2) Forecast Count | (3) Forecast Count | (4) Forecast Count | (5) Forecast Count |
|---|---|---|---|---|---|
| Filer Firm X Post | -0.297*** | -0.252** | -0.263** | -0.140* | -0.171** |
| | (2.854) | (2.541) | (2.120) | (1.701) | (2.110) |
| Filer Firm | 0.590*** | 0.646*** | 0.703*** | | |
| | (5.304) | (4.855) | (4.728) | | |
| Post | -0.085 | | | | |
| | (0.975) | | | | |
| Size | 0.046 | 0.122*** | 0.144*** | -0.063 | -0.055 |
| | (1.413) | (3.199) | (3.092) | (0.415) | (0.334) |
| MTB | 0.372*** | 0.275*** | 0.306*** | 0.004 | 0.019 |
| | (5.287) | (4.141) | (4.279) | (0.066) | (0.234) |
| Leverage | 1.156*** | 1.161*** | 1.228*** | -1.334** | -1.589*** |
| | (3.527) | (3.450) | (3.349) | (2.333) | (2.787) |
| ROA | -0.734** | -0.399 | -0.803 | -1.170** | -1.113** |
| | (2.205) | (0.906) | (1.410) | (2.390) | (2.314) |
| SD(Ret) | -0.045*** | -0.038*** | -0.050*** | 0.003 | -0.002 |
| | (5.856) | (4.888) | (4.883) | (0.278) | (0.194) |
| Returns | 0.136* | 0.090 | 0.100 | -0.062 | -0.060 |
| | (1.770) | (1.167) | (1.126) | (0.808) | (0.811) |
| Log(Volume) | 0.004 | -0.011 | -0.037 | -0.028 | -0.037 |
| | (0.251) | (0.681) | (0.903) | (0.832) | (1.076) |
| Loss | -0.551*** | -0.382*** | -0.433*** | -0.036 | -0.024 |
| | (6.242) | (4.060) | (3.840) | (0.390) | (0.231) |
| Following | 0.449*** | 0.396*** | 0.522*** | 0.211** | 0.145 |
| | (6.877) | (5.645) | (5.137) | (2.007) | (1.397) |
| Special Items | -3.972*** | -1.793 | -2.309 | 2.238 | 2.495 |
| | (2.714) | (1.266) | (1.372) | (1.291) | (1.419) |
| Dispersion | | | -0.143** | -0.101 | -0.131 |
| | | | (2.223) | (1.345) | (1.433) |
| Chg Lambda | | | 0.036 | 0.105* | 0.098 |
| | | | (0.723) | (1.687) | (1.567) |
| Chg Spread | | | -0.001 | -0.001 | -0.001 |
| | | | (0.406) | (1.057) | (0.868) |
| Lag Forecast Count | | | | | -0.263*** |
| | | | | | (4.707) |
| Observations | 4,613 | 4,613 | 4,097 | 4,097 | 4,097 |
| Adjusted R-squared | 0.158 | 0.239 | 0.231 | 0.900 | 0.907 |
| Date FE | NO | YES | YES | YES | YES |
| Industry FE | NO | YES | YES | NO | NO |
| Firm FE | NO | NO | NO | YES | YES |

This table examines the count of annual EPS forecasts issued by a firm during the year. *Forecast Count* is the count of annual EPS forecasts issued during the 365-day observation period. *Filer Firm* is a dummy variable equal to 1 if the firm filed a Form SD in 2014 and 0 otherwise. *Post* is a dummy variable equal to 1 on or after the 2014 Form SD filing date. Definitions of other variables are available in Appendix A. Standard errors are clustered at the firm level and absolute t-statistics are shown in parentheses. *** p<.01, ** p<.05, * p<0.1

**Table 10: Count of Forecasts Around 2014 Form SD Filing – Cross-Sectional Analysis**

| VARIABLES | (1) Forecast Count | (2) Forecast Count | (3) Forecast Count | (4) Forecast Count |
|---|---|---|---|---|
| Filer Firm X Post X High Competition | -0.475* | | | |
| | (1.910) | | | |
| Filer Firm X Post X Competition | | -2.880** | | |
| | | (2.261) | | |
| Filer Firm X Post X High Spread | | | 0.677** | |
| | | | (2.215) | |
| Filer Firm X Post X Chg Spread | | | | 0.006** |
| | | | | (2.174) |
| Filer Firm X Post | -0.128 | -0.510*** | -0.543*** | -0.203* |
| | (0.828) | (2.995) | (2.788) | (1.802) |
| Observations | 4,613 | 4,613 | 4,613 | 4,613 |
| Adjusted R-squared | 0.240 | 0.239 | 0.240 | 0.239 |
| Year FE | YES | YES | YES | YES |
| Industry FE | YES | YES | YES | YES |
| Controls and Lower Order Terms | YES | YES | YES | YES |

This table examines the effects of competition and the information asymmetry response to the conflict minerals disclosure on number of annual EPS forecasts issued by a firm during the year.
*Forecast Count* is the number of annual EPS forecasts issued during the 365-day observation period. *Filer Firm* is a dummy variable equal to 1 if the firm files a conflict minerals disclosure in 2014 and 0 otherwise. *Post* is a dummy variable equal to 1 if the observation year is 2014 and 0 otherwise. *Low (High) Competition* is a dummy variable equal to 1 if the observation's Herfindahl index (HHI) falls above (below) the median HHI. *Competition* is defined as -1 multiplied by the observation's Herfindahl index. *High Spread* is a median-wise cut on the change in information asymmetry variable, *Chg Spread*, after the 2014 Form SD filing equal to 1 for firms with the largest increases (smallest decreases) in bid-ask spread. Main effects, lower-order interactions and controls are omitted for brevity but are included in the specifications. All other variables are calculated as in previous analyses and definitions are available in Appendix A.
Standard errors are clustered at the firm level and absolute t-statistics are shown in parentheses.
*** p<.01, ** p<.05, * p<0.1

**Table 11: Count of Forms 8K Around 2014 Form SD Filing**

| VARIABLES | (1)<br>8-K Count | (2)<br>8-K Count | (3)<br>8-K Count |
|---|---|---|---|
| Filer Firm X Post | -1.279** | -1.095*** | -0.050* |
| | (3.232) | (2.622) | (1.809) |
| Filer Firm | 2.765*** | 4.773*** | |
| | (9.081) | (7.785) | |
| Post | -0.738 | | |
| | (0.976) | | |
| Observations | 4,613 | 4,613 | 4,097 |
| Adjusted R-squared | 0.176 | 0.190 | 0.751 |
| Controls | YES | YES | YES |
| Year FE | NO | YES | YES |
| Industry FE | NO | YES | NO |
| Firm FE | NO | NO | YES |

This table examines the number of Forms 8-K issued by a firm during the year. *8-K Count* is the number of number of Forms 8-K issued during the 365-day observation period. *Filer Firm* is a dummy variable equal to 1 if the firm files a conflict minerals disclosure in 2014 and 0 otherwise. *Post* is a dummy variable equal to 1 for the period beginning when the mandate takes effect and 0 otherwise. Definitions of other variables are available in Appendix A. Standard errors are clustered at the firm level and absolute t-statistics are shown in parentheses. *** p<.01, ** p<.05, * p<0.1

**Table 12: Parallel Trends Assessment of Annual Earnings Forecast Frequency**

| VARIABLES | (1)<br>Forecast Count |
|---|---|
| Filer Firm X Year = 2012 | -0.138 |
| | (1.343) |
| Filer Firm X Year = 2013 | -0.130 |
| | (1.149) |
| Filer Firm X Year = 2014 | -0.427*** |
| | (3.372) |
| Filer Firm X Year = 2015 | -0.493*** |
| | (3.843) |
| Filer Firm X Year = 2016 | -0.517*** |
| | (3.790) |
| Filer Firm X Year = 2017 | -0.278** |
| | (2.160) |
| Filer Firm X Year = 2018 | -0.375*** |
| | (2.708) |
| Year = 2012 | -0.062 |
| | (0.846) |
| Year = 2013 | 0.061 |
| | (0.737) |
| Year = 2014 | 0.160* |
| | (1.750) |
| Year = 2015 | 0.190** |
| | (2.089) |
| Year = 2016 | 0.077 |
| | (0.759) |
| Year = 2017 | -0.041 |
| | (0.473) |
| Year = 2018 | -0.004 |
| | (0.045) |
| Filer Firm | 0.807*** |
| | (6.458) |
| Observations | 18,818 |
| Adjusted R-squared | 0.014 |

This table examines the parallel trends assumption underlying the difference-in-differences design of H3. *Filer Firm* is a dummy variable equal to 1 if the firm files a conflict minerals disclosure in 2014 and 0 otherwise. *Year* indicator variables are included for each year from 2012 to 2018, with 2011 used as the base year. Standard errors are clustered by firm and absolute t-statistics are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

**Table 13: Long-Run Information Asymmetry Changes Around 2014 Form SD Filing**

| VARIABLES | (1)<br>15 Day | (2)<br>30 Day | (3)<br>45 Day | (4)<br>90 Day | (5)<br>180 Day | (6)<br>360 Day |
|---|---|---|---|---|---|---|
| Spread Decrease | -5.594*** | -3.663*** | -0.030*** | -1.494 | -0.844 | -0.974 |
| | (5.183) | (3.143) | (3.086) | (1.314) | (0.591) | (0.454) |
| Constant | 0.991 | 0.731 | 0.017** | 0.732 | 2.105 | 0.800 |
| | (1.125) | (0.751) | (2.124) | (0.747) | (0.659) | (0.427) |
| Negative Sum of Coefficients | YES*** | YES*** | YES** | NO | NO | NO |
| *Controls* | | | | | | |
| Size | 1.603*** | 1.235** | 0.008 | -0.239 | -0.402 | 1.687 |
| | (2.889) | (2.091) | (1.557) | (0.387) | (0.577) | (1.425) |
| MTB | 0.875 | 0.061 | -0.003 | -0.241 | -1.006 | 0.537 |
| | (1.593) | (0.103) | (0.506) | (0.401) | (1.327) | (0.432) |
| Leverage | -4.297 | -3.522 | -0.050 | -8.293* | -7.918 | -8.858 |
| | (1.298) | (0.957) | (1.521) | (1.959) | (1.599) | (1.101) |
| ROA | 5.483 | 0.600 | -0.079 | -17.572** | -10.134 | -8.452 |
| | (0.958) | (0.092) | (1.222) | (1.984) | (1.046) | (0.701) |
| SD(Ret) | -0.171 | 0.048 | 0.002 | -0.022 | 0.114 | 0.027 |
| | (0.973) | (0.242) | (0.913) | (0.113) | (0.500) | (0.071) |
| Returns | -0.952 | -0.057 | -0.007 | -1.511 | -1.884 | -6.007** |
| | (0.798) | (0.049) | (0.702) | (1.092) | (1.342) | (2.375) |
| Log(Volume) | 0.544 | 0.128 | -0.001 | 0.798 | -0.138 | -0.980 |
| | (1.226) | (0.275) | (0.289) | (1.428) | (0.209) | (0.964) |
| Observations | 636 | 636 | 636 | 636 | 636 | 636 |
| Adjusted R-squared | 0.115 | 0.026 | 0.022 | 0.022 | 0.014 | 0.009 |

This table examines the long-run change in the bid-ask spread after the filing of Forms SD in 2014.
The dependent variable, *Chg Spread*, is equal to the difference between the average daily bid-ask spread over the period between 0 and N days after the observation date, where N is the number of days in the column header, and the average daily bid-ask spread over the period between 5 and 50 days prior to the observation date, multiplied by 100. *Spread Decrease* is a dummy variable equal to 1 if *Chg Spread* is negative over the [0,2] window around the Form SD filing.
*Size* is the natural logarithm of total assets. *MTB* is the sum of the current market value of the firm, plus the book value of liabilities divided by total assets. *ROA* is the industry adjusted income before extraordinary items for the year divided by total assets. *Leverage* is the sum of long-term debt and short-term debt divided by total assets. *SD(Ret)* is equal to the standard deviation of the preceding 12 monthly buy-and-hold returns multiplied by 100. *Returns* is equal to the annual buy-and-hold return over the 12 months preceding the observation date. *Log(Volume)* is the natural logarithm of the average volume over the 5 days preceding the Form SD filing date. All independent variables are standardized to facilitate interpretation of the intercept and for coefficient comparability.
Standard errors are clustered by industry and absolute t-statistics are shown in parentheses.
*** p<.01, ** p<.05, * p<0.1

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